



## Planning Commission Meeting Agenda

January 14, 2025  
5:30 PM – Regular Meeting  
Council Chambers  
400 N. Douty St.

Planning Commissioners will meet in-person in the Council Chambers. The meeting will also be live streamed on the City's website: <http://livestream.hanford.city/>

### ROLL CALL:

### INVOCATION:

### FLAG SALUTE:

### PUBLIC COMMENT:

*This is the time for citizens to comment on subject matters not on the agenda and that are within the jurisdiction of the Commission. This is also the public's opportunity to request an item from the Consent Calendar be pulled for discussion purposes or to comment on any item on the agenda. Comments related to Public Hearing items will be heard at the time the item is discussed. A maximum of three minutes is allowed for each speaker. Please begin your comments by stating your name and providing your city of residence.*

### ELECTION OF THE 2025 PLANNING COMMISSION CHAIR AND VICE-CHAIR:

### CONSENT CALENDAR:

*Consent Calendar items are considered routine and will be enacted in one motion. There will be no separate discussion of these matters unless a request is made and then the item will be removed from the Consent Calendar to be discussed and voted upon by a separate motion.*

### PUBLIC HEARING:

- A. Community Development: Annexation 161: A request to annex 88.89 acres into the City of Hanford from the Kings County jurisdiction. Prezone No. 0005-23: A request to prezone the land proposed to be annexed as R-L-5 Low-Density Residential, in accordance with the General Plan designation for the territory, Low-Density Residential. Vesting Tentative Tract 943 (Silicon Valley Ranch): A request, by Marc Frelie, to subdivide 75.02 acres proposed to be prezoned R-L-5 Low-Density Residential into 326 single-family residential lots, a 3.58-acre park, and three-acre storm basin. Focused Environmental Impact Report (EIR) State Clearinghouse Number (SCH) 2024060956: A request to certify the Final Focused Environmental Impact Report for the project and



adopt a Statement of Overriding Considerations for the project's significant impact to Transportation/Traffic. The Project is located south of Hanford Armona Road, between 12<sup>th</sup> and 13<sup>th</sup> Avenues (APN 011-040-008, -010, and -027).

- B. Community Development: General Plan Amendment No. 2022-01: a request to change the general plan designation from Highway Commercial to Service Commercial and High-Density Residential on approximately 39.16 acres.

Rezone No. 2022-01: a request to change the zoning on 39.16 acres from C-H Highway Commercial to C-S Service Commercial and R-H High-Density Residential with a Planned Unit Development overlay.

Planned Unit Development No. 2022-01: a request to allow blended zoning for a master planned medical and mixed-use development, including the future construction of 15 buildings consisting of medical outpatient clinic services, a hotel and conference center, specialized education, retail, medical office, skilled nursing and assisted living, and multi-family residential uses, as well as a bio infiltration basin, associated open space, circulation and parking, and infrastructure improvements.

Mitigated Negative Declaration No. 2023-93: a request to certify that the project will have a less than significant impact with the incorporation of mitigation measures.

The project is located between 11<sup>th</sup> and 12<sup>th</sup> Avenues along Glendale Drive, north of Highway 198 (APN 011-060-007, 011-060-008, 012-290-042, and 012-290-054).

## **DIRECTOR'S COMMENTS:**

## **COMMISSIONERS' ITEMS OF INTEREST:**

*At this time, any Commissioner may ask a question for clarification of matters within the Planning Commission's jurisdiction, make an announcement, or report briefly on activities in their role as a Planning Commissioner. In addition, subject to the Planning Commissioner's Handbook, Commissioners may request staff to report back to the Planning Commission at a subsequent meeting concerning any matter within the Commissioner's jurisdiction (GC 54954.2).*

## **ADJOURNMENT:**

*Materials related to an item on this Agenda submitted to the Planning Commission after distribution of the agenda packet are available to public inspection in the Planning Division Office located at 317 N. Douty Street, Hanford, California 93230, during normal business hours. Such documents are also available at the city's website, [www.cityofhanfordca.com](http://www.cityofhanfordca.com) subject to staff's ability to post documents before the meeting. If you need a disability-related modification or accommodation, including auxiliary aids or services, to participate in this meeting, please contact the Planning Division's office, 559-585-2580, 317 N. Douty Street, Hanford, California 93230, at least 2 days prior to the meeting {28 CFR 35.102.35.104 ADA Title II} APPEALS: Any action of the Planning Commission, which is a final project decision, may be appealed to the City Council by the applicant or any adversely affected person. To file an appeal, an appeal application and filing fee of \$1,100.00 must be submitted to the Community Development Department, 317 N. Douty Street, Hanford, California, within ten (10) days following the date of the final decision of the Planning Commission.*

**CITY OF HANFORD PLANNING COMMISSION  
STAFF REPORT  
Tuesday, January 14, 2025**

**PROJECT:**     **Annexation 161:** A request to annex 88.89 acres into the City of Hanford from the Kings County jurisdiction.

**Prezone No. 0005-23:** A request to prezone the land proposed to be annexed as R-L-5 Low-Density Residential, in accordance with the General Plan designation for the territory, Low-Density Residential.

**Vesting Tentative Tract 943 (Silicon Valley Ranch):** A request, by Marc Frelier, to subdivide 75.02 acres proposed to be prezoned R-L-5 Low-Density Residential into 326 single-family residential lots, a 3.58-acre park, and three-acre storm basin.

**Focused Environmental Impact Report (EIR) State Clearinghouse Number (SCH) 2024060956:** A request to certify the Final Focused Environmental Impact Report for the project and adopt a Statement of Overriding Considerations for the project's significant impact to Transportation/Traffic.

**Location:**     The Project is located south of Hanford Armona Road, between 12<sup>th</sup> and 13<sup>th</sup> Avenues (APN 011-040-008, -010, and -027).

**PLANNER:**     Gabrielle Myers, Senior Planner

|                             |
|-----------------------------|
| <b>STAFF RECOMMENDATION</b> |
|-----------------------------|

Staff recommends that the Planning Commission:

1. Adopt Resolution No. 2025-01, recommending certification of Focused EIR SCH #2024060956 to the City Council.
2. Adopt Resolution 2025-02, recommending approval of Prezone No. 0005-23 to the City Council.
3. Find that the proposed Annexation No. 161 is consistent with the Hanford General Plan Policies L15 and L17 and forward Annexation No. 161 to the City Council, with a recommendation that an application be made to the Local Agency Formation Commission (LAFCO) of Kings County.
4. Adopt Resolution 2025-03, recommending approval of Vesting Tentative Tract 943 to the City Council.

|                           |
|---------------------------|
| <b>RECOMMENDED MOTION</b> |
|---------------------------|

I move to:

1. Adopt Resolution No. 2025-01, recommending certification of Focused EIR SCH #2024060956 to the City Council.

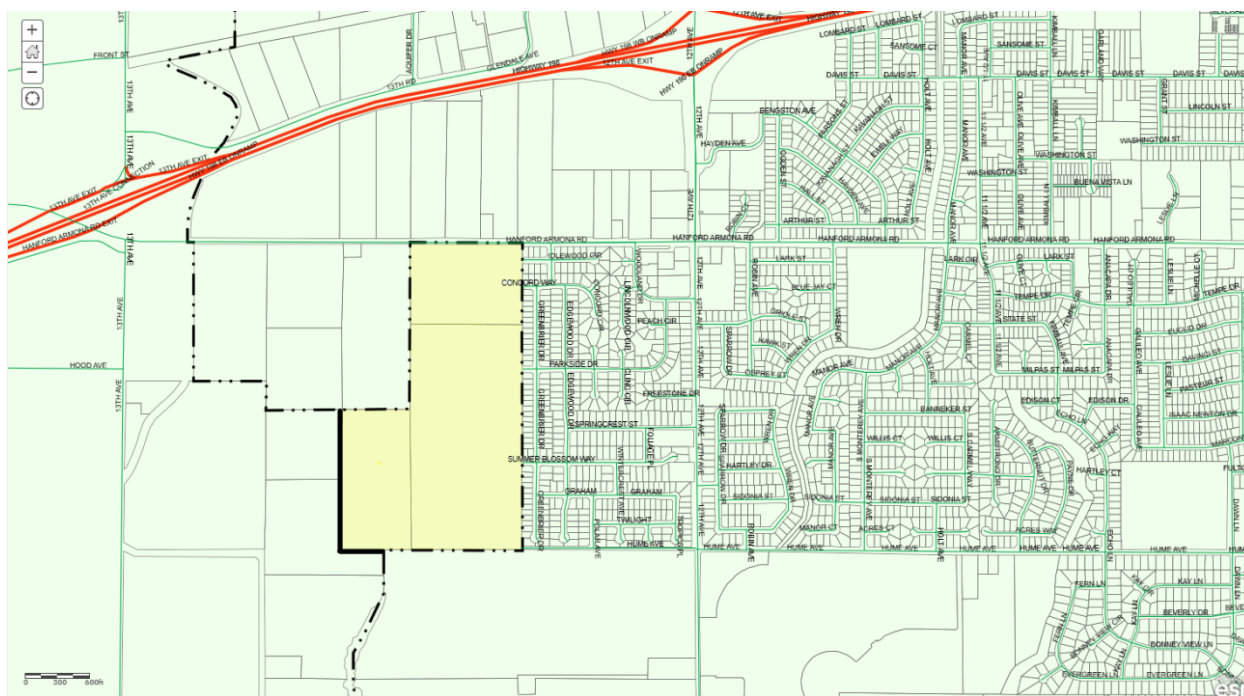
2. Adopt Resolution 2025-02, recommending approval of Prezone No. 0005-23 to the City Council.
3. Find that the proposed Annexation No. 161 is consistent with the Hanford General Plan Policies L15 and L17 and forward Annexation No. 161 to the City Council, with a recommendation that an application be made to the Local Agency Formation Commission (LAFCO) of Kings County.
4. Adopt Resolution 2025-03, recommending approval of Vesting Tentative Tract 943 to the City Council.

## PROJECT DESCRIPTION

### Annexation 161

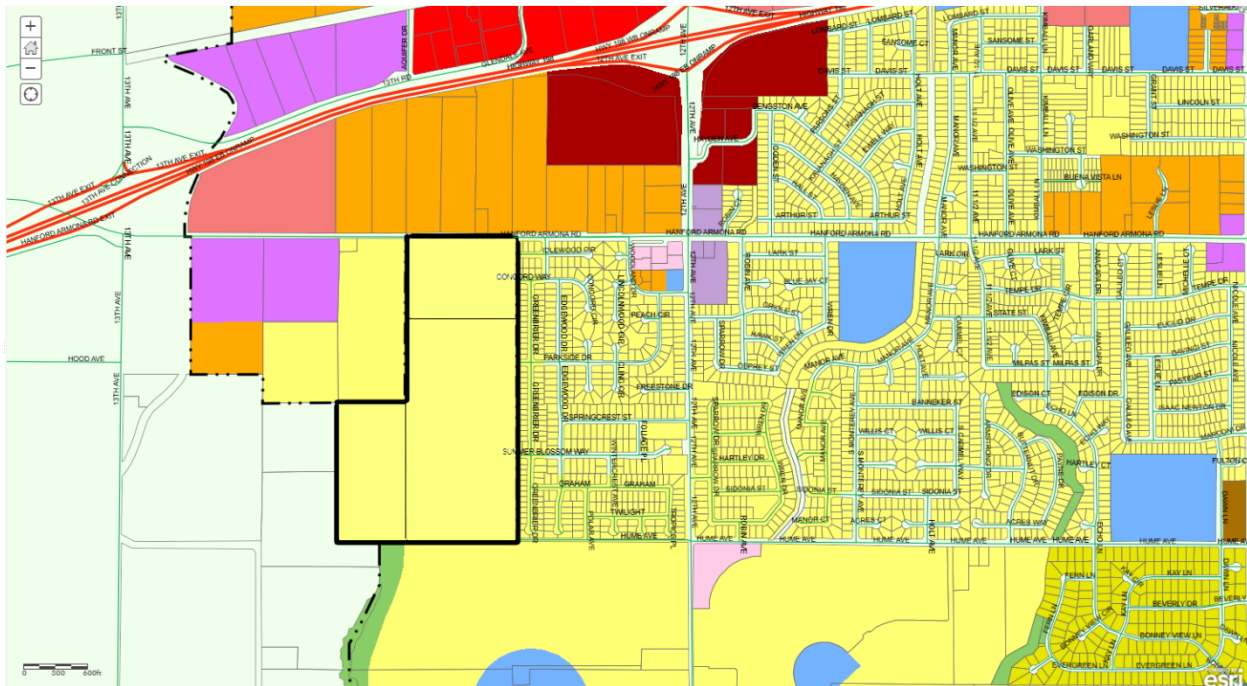
Annexation 161 is a request to annex 88.89 acres into the City of Hanford from the Kings County jurisdiction. See Figure 1 and **Attachment 1**.

**Figure 1:**  
Proposed Annexation Area (shown in yellow)



**Prezone No. 0005-23** is a request to prezone the land proposed to be annexed as R-L-5 Low-Density Residential, in accordance with the General Plan designation for the territory, Low-Density Residential. See Figure 2, below.

**Figure 2: Prezone No. 0005-23**  
**R-L-5 Low-Density Residential (outlined in bold)**



**Tentative Tract 943 (Silicon Valley Ranch)** is a request, by Marc Frelie, to subdivide 75.02 acres proposed to be prezoned R-L-5 Low-Density Residential into 326 single-family residential lots, a 3.58-acre park, and three-acre storm basin over three phases.

Vesting Tentative Tract 943 – Attached as **Attachment 2**.

## BACKGROUND INFORMATION

### Project Location

The Project is located south of Hanford Armona Road, between 12<sup>th</sup> and 13<sup>th</sup> Avenues (APN 011 040-008, -010, and -027). See Figure 3, below.



**Figure 3: Project Location**



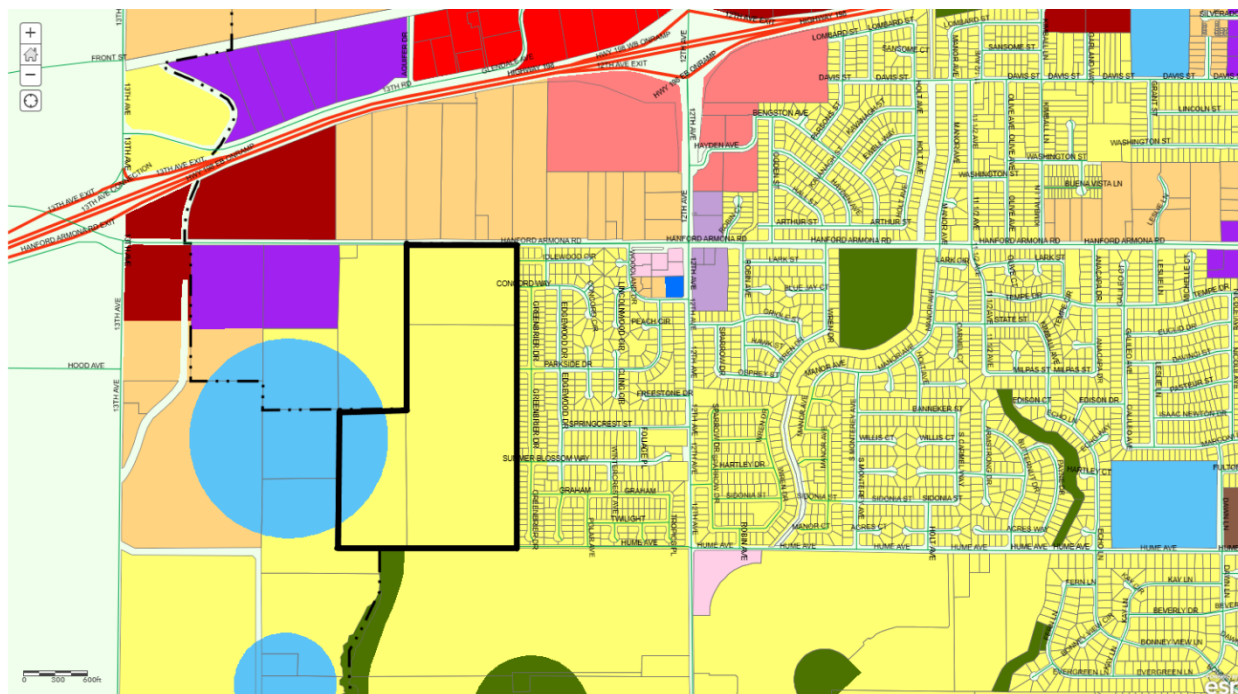
**Existing Land Use**

The lot is vacant.

## **General Plan and Zoning Designation**

The site is designated by the General Plan as Low-Density Residential with a Future Educational Facility overlay.

**Figure 4: General Plan Designation**



### **Low-Density Residential Designation**

In accordance with the General Plan, the expected density range for Low-Density Residential is two to 10 units per gross acre, with an expected average of four units per gross acre. According to Land Use Policy L31, the purpose of the Low-Density Residential land use designation is to provide mainly single-family development on lot sizes typically found in urban settings. Typical uses in the Low-Density Residential land use designation include residential uses in a variety of single-family lot types. Duplexes, second dwelling units, and home occupations can also be allowed when made compatible with the residential nature of the neighborhood, according to Policy L32.

### **“Floating” Educational Facility Designation**

In accordance with the General Plan Policy L1000, where a site is not yet developed, the land use designation is allowed to “float” on the Land Use Map within the one-mile square section in which it is located. Locations along collector streets are preferred for new elementary schools.

During the consultation process, the local school districts were contacted and did not require use of this site as a school facility. The City’s role in development and managing school sites and programs is limited. The various school districts truly govern where a new school site would be located and when it would be necessary to construct or expand facilities, in order to adequately accommodate population growth. Elected governing school boards are responsible for budgeting



and decision-making and the State Department of Education establishes school site and construction standards. The General Plan provides policy which focuses on collaboration with school districts in determining new school locations and utilizing school facilities for general public needs. School districts would be able to utilize the General Plan, along with other plans, standards, and codes, to establish new school sites and to make decisions on school amenities and cohesiveness with the surrounding area.

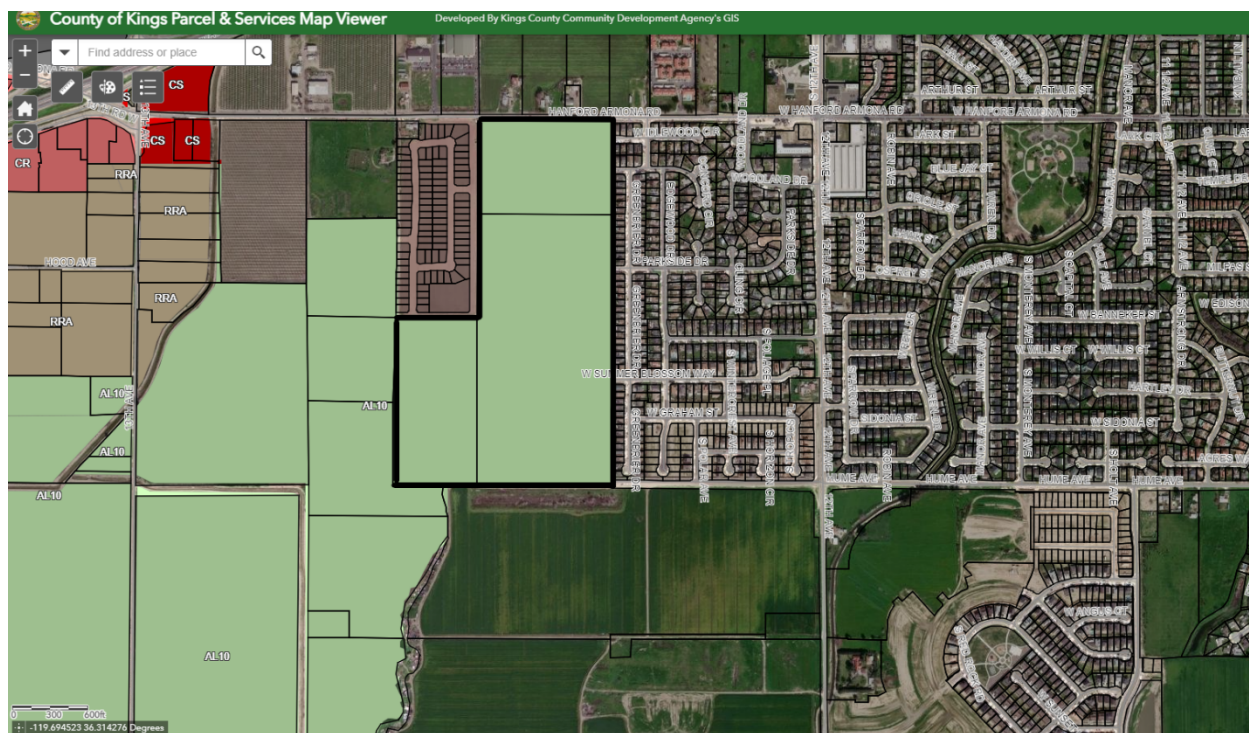
Educational services needed for the development of the Project will be provided by the Hanford Elementary School District (HESD) and Hanford Joint Union High School District (HJUHS). Payment of fees to a school district is considered mitigation for project impacts on school facilities (Government Code Section 65996(a)). Therefore, the project applicant would be required to pay the statutory fees to accommodate the impact of project-generated student.

## Zoning

### *Current*

The property is currently in the Kings County Jurisdiction and zoned AL-10 Limited Agriculture.

**Figure 5: Current Zoning**



The property is proposed to be rezoned R-L-5 Low-Density Residential, 5,000 square-foot minimum lot size, in accordance with the General Plan Designation for the property. See Figure 2.



### **Adjacent Land Use and Zoning**

|               | Land Use                                                                                 | Zoning                   | General Plan Designation               |
|---------------|------------------------------------------------------------------------------------------|--------------------------|----------------------------------------|
| <b>North:</b> | Large Lot Single-Family Residential                                                      | City R-M                 | Medium-Density Residential             |
| <b>South:</b> | Vacant; Planned for future single-family residential (Tentative Tract 909 Live Oak West) | City R-L-5 and PF        | Low-Density Residential and Open Space |
| <b>East:</b>  | Single-Family Residential                                                                | R-L-5                    | Low-Density Residential                |
| <b>West:</b>  | Planned Single-Family Residential (Tract 927 and 940) and Vacant                         | County AL-10; City R-L-5 | Low-Density Residential                |

### **PROJECT EVALUATION**

#### **Annexation No. 161**

Annexation 161 is a request to annex 88.89 acres into the City of Hanford from the Kings County jurisdiction. See Figure 1 and **Attachment 1**.

Annexation of land into Hanford allows previously undeveloped land to become available for development and allows the City of Hanford to provide the territory that is annexed with its full range of City services. The annexation process can serve as an interim growth management tool, by limiting annexation to only the land that is needed for growth at the time.

The Hanford Planning Commission is charged with reviewing proposed annexation and making a finding of consistency with the Hanford General Plan to forward to the City Council. The Planning Commission will need to find that Annexation 161 is consistent with the Hanford General Plan Policy L15 and L17.

#### **Policy L15 Initiation of Annexations**

Consider initiation of annexation of land into the City of Hanford only when the following criteria are met:

1. The land is within the Primary Sphere of Influence.

Analysis: The property proposed to be annexed is within the City's Primary Sphere of Influence, as shown in **Attachment 3**.

2. The capacity of the water, sewer, fire, school, and police services are adequate to service the area to be annexed, or will be adequate at the time that development occurs.

Analysis: A Plan for Services has been prepared by Engineering for Water, Sanitary Sewer, and Storm Drainage.

### Sewer Improvements

The developer's engineer will provide a sanitary sewer master plan with calculations for the entire subdivision that coincides with the Live Oak West Sanitary Sewer Master Plans prior to recording a subdivision final map for the development. Consideration shall be given for future areas of development located adjacent to proposed subdivision per the City Sanitary Sewer Master Plan.

A minimum 15-inch diameter sanitary sewer main is required to be installed within Aquifer Drive between Spring Crest Drive and Hume Avenue, subject to reimbursement for oversizing, in accordance with the Municipal Code Section 13.08.

The developer is required to install a sanitary sewer lift station, per the Live Oak West Sanitary Sewer Master Plan, to be located at the southwest corner of Hume Avenue and Aquifer Drive.

A 6-inch diameter sanitary sewer force main is required to be installed within Hume Avenue from the sanitary sewer lift station west of Aquifer Drive along development frontage and connecting to an existing gravity manhole at the east project boundary, subject to reimbursement for oversizing, in accordance with the Municipal Code Section 13.08.

### Storm Drainage Improvements

The developer's engineer will provide a storm drainage master plan, complete with calculations for the entire subdivision prior to recording a subdivision final map for the development. The developer will complete construction of the storm drain basin within the first phase of the subdivision. The basin is required to be designed in conformance with the City of Hanford's Storm Drainage Design Criteria specifications and is required to include a six (6) ft. minimum high ornamental, masonry block fence with continuous footing along the Aquifer Drive and Hume Avenue frontages, a 24' wide drive approach per City Standard Detail CO-41 and access gates per City Standard Detail GE-26. A chain-link fence with continuous footing per City Standard Detail GE-23 shall be constructed along non street basin boundaries. The developer is required to comply with the State of California Water Resources Control Board requirements specifically related to the National Pollution Elimination System Permit process.

### Water System

The developer's engineer is required to provide a Water System Master Plan complete with calculations for the entire subdivision for City review and approval prior to recording a subdivision final map for the first phase of development. Consideration shall be given for future areas of development located adjacent to proposed subdivision, as shown on the city Water Master Plan. A minimum 18-inch diameter water main and appurtenances, will be extended along property frontage within Aquifer Avenue. The applicant shall be entitled to a refund for water main oversizing in accordance with City Municipal Code Section 13.04. A minimum 12-inch diameter water main and appurtenances will be extended along the property frontage within Hume Avenue. Applicant shall be entitled to a refund for water main oversizing in accordance with City Municipal Code Section 13.04.

All existing water wells will be abandoned, in conformance with State of California Department of Health Standards.

#### Fire and Police

Fire and police services are adequate to service the area to be annexed. Impacts to fire and police services will be mitigated through payment of impact fees.

#### School

Educational services needed for the development of the Project will be provided by the Hanford Elementary School District (HESD) and Hanford Joint Union High School District (HJUHS). Payment of fees to a school district is considered mitigation for project impacts on school facilities (Government Code Section 65996(a)). Therefore, the project applicant would be required to pay the statutory fees to accommodate the impact of project-generated student.

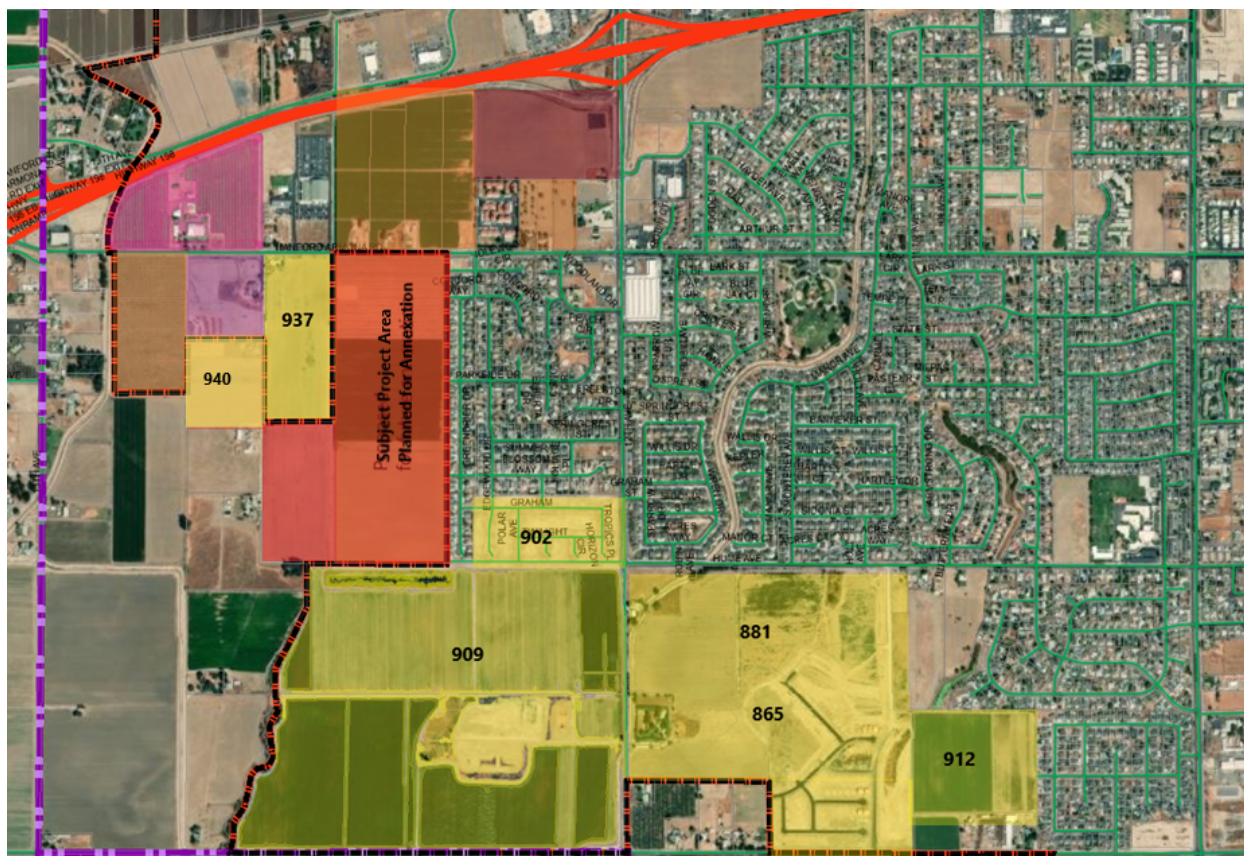
Notice of the proposed project was sent to the interested agencies for pre-consultation and normal consultation. A response was received by the Hanford Joint Union High School District stating, "This area is within our most impacted school boundary."

The City's role in development and managing school sites and programs is limited. The various school districts truly govern where a new school site would be located and when it would be necessary to construct or expand facilities, in order to adequately accommodate population growth. Elected governing school boards are responsible for budgeting and decision-making and the State Department of Education establishes school site and construction standards. The General Plan provides policy which focuses on collaboration with school districts in determining new school locations and utilizing school facilities for general public needs. School districts would be able to utilize the General Plan, along with other plans, standards, and codes, to establish new school sites and to make decisions on school amenities and cohesiveness with the surrounding area.

3. Land for development within the City limits is insufficient to meet the current land use needs.

Analysis: The applicant is proposing a 75.02-acre single-family residential development in the southwest planning area. Available land for new development within the Low-Density Residential land use designation is limited in the southwest planning area of the City. The majority of the properties designated for Low-Density Residential development have been developed or entitled, as shown in Figure 6, below. The proposal is considered an implementation of the General Plan.

**Figure 6: Entitled Properties**



4. The territory to be annexed is contiguous to existing developed areas.

Analysis: The territory to be annexed is directly contiguous to the current City limits to the north, south, and east.

#### **Policy L17 Plan for Services**

Prepare and make publicly available a written Plan for Services that describes how urban services will be provided prior to initiating an annexation.

Analysis: A written Plan for Services is attached (**Attachment 4**).

#### **Favorable Factors for Annexation**

Favorable and unfavorable factors for annexation have been adopted by LAFCO. The existence of favorable or unfavorable factors should not decide approval or denial; however, a substantial number of favorable or unfavorable factors may determine approval or denial of the proposal.

1. The proposed area is close to urban development and municipal-type services and would enhance its potential for full development.

Analysis: The proposed area is close to the existing City limits and is a logical extension of the City. The annexation area can be served by municipal-type services. The



annexation area is designated as Low-Density Residential by the General Plan and is necessary to accommodate growth within the City of Hanford. The development proposed for the annexation area is consistent with the General Plan.

2. The proposed annexation conforms to the adopted General Plan.

Analysis: The annexation area is proposed to be developed as a single-family residential subdivision. The subdivision is consistent with the General Plan designation, Low-Density Residential. The annexation is consistent with the General Plan Section 3.2.4, which states, "Annexation of land into Hanford allows previously undeveloped land to become available for development and allows the City of Hanford to provide the territory that is annexed with its full range of City services." The annexation area is also consistent with Policy L15 and L17 of the General Plan, as analyzed above.

3. The proposed area is consistent with the sphere of influence.

Analysis: The property proposed to be annexed is within the City's Primary Sphere of Influence, as shown in **Attachment 3**.

4. The proposed annexation comes with 100% consent of all landowners.

Analysis: There are three parcels proposed to be annexed. The annexation comes with 100% consent the property owners. The signed annexation application is attached – **Attachment 5**.

### **Vesting Tentative Tract 943**

**Tentative Tract 943 (Silicon Valley Ranch)** is a request, by Marc Frelie, to subdivide 75.02 acres proposed to be rezoned R-L-5 Low-Density Residential into 326 single-family residential lots, a 3.58-acre park, and three-acre storm basin over three phases.

See proposed subdivision – **Attachment 2**.

APN(s): 011-040-008, 011-040-010, and 011-040-027

Total Area: 75.02 acres

Number of Dwelling Units: 326 single-family residential dwelling units

Units per acre: 4.35 units per gross acre

Potential population increase: 3.67 persons per household x 82 households = 1,196 persons

### **Conformance with the R-L-5 Low-Density Residential Zoning**

#### **17.10.030 Lot area.**

| Smallest      | Largest | Required in R-L-5 |
|---------------|---------|-------------------|
| 5,000 sq. ft. | 12,590  | 5,000 sq. ft.     |

In the R-L-5 Low-Density Residential zone district, the minimum lot size shall be 5,000 square feet, except as prescribed in Section 17.10.100, which allows lot area between 3,600 square feet and 4,999 square feet.

Analysis: The minimum lot size provided in Tentative Tract 943 is 5,000 square feet.

#### **17.10.040. Lot dimensions**

##### *Lot Frontage*

In the R-L-5 Low-Density Residential zone district, the minimum lot frontage shall be 40 feet.

Analysis: There is a minimum of 40 feet of lot frontage provided for all lots within the subdivision.

##### *Lot Width*

In the R-L-5 Low-Density Residential zone district, there shall be a minimum lot width of 50 feet for interior lots and 60 feet for corner lots.

Analysis: All interior lots are a minimum of 50 feet wide and each corner lot is a minimum of 60 feet wide, which is within the allowable minimum lot width.

##### *Lot Depth*

In the R-L-5 Low-Density Residential zone district, the lot depth shall be a minimum of 90 feet.

Analysis: The majority of lots in the subdivision are upward of 100 feet deep; no lot is less than 90 feet deep.

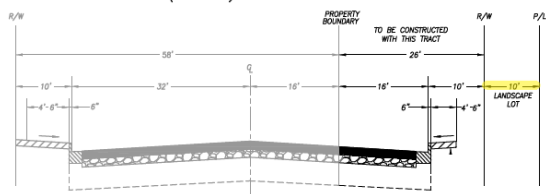
Lots developed adjacent to an arterial or collector street are to be designed as walled or fenced back-on or side-on lots with a minimum five and maximum 10 foot wide landscape easement continuous and adjacent to the street right-of-way line. The minimum lot dimensions are to be exclusive of the landscape easement area. The wall or fence shall be located in the landscape easement area adjacent to the easement line.

Analysis: Hume Avenue is an arterial road, which borders the proposed subdivision to the south. Aquifer and Springcrest Drives are designated collectors within the subdivision. Lots backing onto the adjacent arterial and collector streets are separated by a five- to 10-foot landscape lot, as required.

**Figure 7: Landscape Lots**

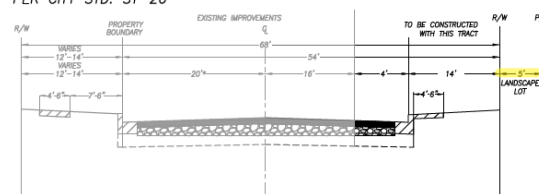
## SECTION A-A AQUIFER DRIVE

NOT TO SCALE  
PER CITY STD. ST-23 (REVISED)



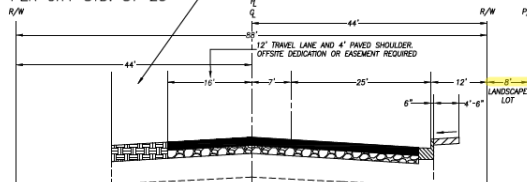
## SECTION B-B W SPRING CREST DRIVE

NOT TO SCALE  
PER CITY STD. ST-26



## SECTION D-D HUME AVENUE

NOT TO SCALE  
PER CITY STD. ST-23



### Density

In accordance with the General Plan, the expected density range for Low-Density Residential is two to 10 units per gross acre, with an expected average of four units per gross acre.

Analysis: The density provided for Tentative Tract 943 is 4.35 units per gross acre, which is within the allowable and expected density range for Low-Density Residential.

### 17.10.050 Dwelling Units per Lot

In the R-L-5 Low-Density Residential zone district, not more than one dwelling unit shall be allowed on each lot, unless approved as an accessory dwelling unit in accordance with Section 17.60.030 (accessory dwelling unit standards) and as permitted by State law.

Analysis: The lots are planned for single-family residential use. Second dwelling units would be permissible, subject to the conditions set forth in 17.60.030 of the Hanford Municipal Code and State law.

### 17.10.060. Coverage

In the R-L-5 Low-Density Residential zone district, the maximum coverage of a lot shall be determined by the combined building setback requirements, accessory structure limitations, and off-street parking requirements.

Analysis: As a condition of approval of the subdivision, all building setbacks, accessory structure limitations, and off-street parking requirements shall be observed. The setback and off-street parking requirements will be verified upon application for building permits of the single-family residences.

### **17.10.070 Building Setback Areas**

In the R-L-5 Low-Density Residential zone district, no structure shall be placed within a building setback area.

#### Front

The front building setback area shall be 15 feet from the front lot line for livable building space and 20 feet for garages, carports, and other non-livable building space.

#### Rear

The rear building setback shall be 15 feet from the rear lot line, except where there is a landscape easement with a wall or fence on the rear of the lot then the rear building setback shall be 20 feet. The rear building setback area shall be increased by 10 feet for buildings over one story high.

#### Side

The side building setback area shall be five feet from an interior side lot line and 10 feet from a street side property line. Where there is a landscape easement with a wall or fence on the street side of the lot the side yard setback area shall be measured from the easement area instead of the side lot line.

Analysis: As a condition of approval of the subdivision, all building setbacks requirements shall be observed. The setback requirements will be verified upon application for building permits of the single-family residences.

### **17.10.080. Distances between structures.**

In the R-L-5 Low-Density Residential zone district the minimum distance between structures shall be 10 feet, except as provided by the building code.

Analysis: As a condition of approval of the subdivision, distance requirements between structures shall be observed. The separation requirements will be verified upon application for building permits.

### **17.10.090. Height of structures.**

In the R-L-5 Low-Density Residential, the maximum structure height shall be 35 feet.

Analysis: As a condition of approval of the subdivision, height requirements shall be observed. Height limitations will be verified upon application for building permits.

### **17.10.110. Driveways.**

In the R-L-5 Low-Density Residential zone district, the width of a driveway and any paved area shall not cumulatively exceed 40% of the width of the lot's street frontage on which the driveway and any paved area faces. In the case of "L" or "U" shaped driveways or other configurations besides perpendicular driveways the paved area of these driveways shall not exceed 50% of the front building setback area. On key lots, the driveway shall be located on the side of the lot which is not adjacent to the rear lot line of the adjacent reverse corner lot.



Analysis: As a condition of approval of the subdivision, driveway requirements shall be observed. Driveway locations and paved surface coverage will be verified upon application for building permits.

#### **17.10.120 Accessory Structures**

In the R-L-5 Low-Density Residential zone district, accessory structures may be located within a required rear or side building setback area, subject to all of the following requirements:

- A. The floor area shall be a maximum 120 square feet.
- B. The walls shall be at least three feet from rear and side lot lines.
- C. The roof eaves shall be at least two feet from rear and side lot lines.
- D. The accessory structure shall be separated from other structures by a minimum of 10 feet.
- E. The plate line height shall be a maximum seven feet high.
- F. The roof pitch shall be a maximum 4:12.
- G. The roof ridge peak height shall be a maximum of 10 feet.

Analysis: The requirements pertaining to accessory structures are communicated to the public, however, the majority of these structures are exempt from building permits and enforced through Code Compliance.

#### **17.10.130 Other Setback Standards**

In the R-L-5 Low-Density Residential zone district, the following setbacks shall also apply:

- A. Mechanical equipment shall be located a minimum of five feet from a side lot line that adjoins a neighboring side lot line.
- B. Garages or carports opening onto an alley shall be set back 25 feet from the far side of the alley, provided that the structure, including roof overhang, shall not extend into the alley right-of-way.
- C. Above or below ground swimming pools shall be set back five feet from all lot lines.
- D. Decks, balconies, and other types of platforms with a floor height over two feet high shall be set back five feet from the rear and interior side lot lines and 10 feet from the street side lot line.
- E. Garages and carports opening on the street side lot line of a corner lot shall be set back 20 feet from the street side lot line.

Analysis: As a condition of approval of the subdivision, all building setbacks requirements shall be observed. The setback requirements will be verified upon application for building permits.

#### **17.10.140. Off-street parking.**

##### Off-Street Parking Requirements:

Off-street parking and off-street loading facilities shall be provided on the site for each use as prescribed in Chapter 17.54.

In the R-L-5 Low-Density Residential zone district, single-family dwellings shall provide a minimum of one covered and one uncovered parking space. Other uses shall provide parking as prescribed in Chapter 17.54. Required parking spaces may not be provided in any front, side, or rear building setback area. Except for driveways allowed in the front building setback area, all

additional parking for residential uses shall be to the rear or side of the dwelling. No parking shall occur in the front or street side building setback areas.

#### Recreational Vehicles:

No recreation vehicle, including without limitation camping trailer, boat trailer, utility trailer, boat, pickup camper, motor home, dune buggy, or similar vehicle/trailer shall be stored or parked, except within an enclosed side or rear yard or within a garage or carport except if a side or rear yard is not accessible due to existing legal permanent structures, a recreational vehicle or trailer may be parked in a driveway or adjacent to a driveway if it does not create a nuisance or safety problem as determined by the Community Development Director. All recreational vehicles or trailers parked in a location visible from the street are to be clean and maintained so as not to detract from the neighborhood. Also, see Chapter 10.76 of the Hanford Municipal Code. No recreational vehicle or trailer shall be used as a residence.

#### Vehicles Incapable of Movement Under Their Own Power

All motor vehicles incapable of movement under their own power, other than in cases of emergency, shall be stored in an entirely enclosed space, garage, or carport. Vehicles with custom fitted covers may be stored in an open area when it does not create a nuisance or safety problem as determined by the Community Development Director, cause complaints from neighbors or violate any section of this code.

Repair of vehicles owned by the resident of the property and storage of parts shall be within an enclosed garage or carport, if no garage exists. Repair of vehicles not owned by the resident of the property is prohibited. Vehicle repair and storage of parts are prohibited in a driveway and the front or street side building setback areas. I. Garages and carports are to be primarily used for the parking of four-wheeled vehicles. The use of garages or carports for general storage, recreation activities or other uses that prevent the use of the garage or carport for the parking of at least one four-wheeled vehicle is prohibited.

Analysis: The above requirements pertaining to off-street parking, recreational vehicles, vehicles incapable of movement under their own power, and repair of vehicles appear as conditions of approval of the resolution for the subdivision.

#### **17.10.150. Usable open space.**

In the R-L-5 Low-Density Residential zone district, each lot shall provide for a usable open space area of a minimum 400 square feet that is a minimum 15 feet wide.

Analysis: The required open space is generally provided within the required rear-yard setback area. As a condition of approval of the subdivision, open space requirements shall be observed. The open space requirements will be verified upon application for building permits for the single-family residence.

#### **17.10.160. Landscaping.**

In the R-L-5 Low-Density Residential zone district, the following landscape standards shall apply:

- A. Landscaping shall be provided for each use as prescribed in Chapter 17.52, Landscape Standards.

- B. Except for driveways and approved parking areas all yard areas and setback areas visible from the street(s) shall be landscaped with live plant materials and ornamentation common to the Hanford area or up to 100% of the yard and setback area may be landscaped with artificial turf and other permeable surfaces.
- C. Required landscaping is to be installed within six months after occupancy of the residence, apartment or office and continually maintained pursuant to Chapter 17.52.
- D. Landscaped areas are not to be used or converted to parking areas or any other use which results in the damage or removal of the landscaping. However, the widening of an existing paved driveway perpendicular to the street is permitted if the total width of the existing paving and the new paving does not exceed 40% of the lot frontage along the street.
- E. In order to provide a tree lined street in the residential zone districts, the following requirements shall be provided in the required parkway:
  - 1. Two street trees, a minimum 15 gallon size, shall be planted on all lots 6,000 square feet or greater. One of the two front yard trees must be planted 12 feet (no greater or no less) from the face of the front lot line street curb.
  - 2. One street tree, or two street trees on corner lots, a minimum 15 gallon size, shall be planted on all lots less than 6,000 square feet. The tree shall be planted in the parkway. If there is no parkway the tree shall be planted four feet behind the sidewalk, or if there is no sidewalk then four feet behind the street curb.
  - 3. There shall be two additional street trees, a minimum 15 gallon size, planted on all corner lots in the parkway adjacent to the street side lot line.
- F. Front yard landscaping. If front yard landscaping is provided by the builder, a prototype landscape plan is required when a building permit is requested to show that the trees will be planted as stated above. The front yard landscaping is to be installed within 30 days from final building inspection approval. If front yard landscaping is not provided by the builder a fee of \$50 for each required tree shall be collected when a building permit is requested. When the house is occupied, the builder, within 30 days, is required to plant one fifteen (15) gallon tree at the 12 foot setback line from the street curb. If the homeowner plants the remaining three trees as described above within one year of occupancy, the homeowner will be reimbursed the \$50 per tree up to three trees. The builder will be reimbursed the \$50 for the required tree at the 12 foot line.

Analysis: As a condition of approval of the subdivision, landscaping requirements shall be observed. The landscaping requirements will be verified upon application for landscape permits for the single-family residence.

#### **17.10.170. Screening, Fences, and Walls.**

Fences and walls shall be provided on the site for each use in accordance with Section 17.50.120.

Analysis: As a condition of approval of the subdivision, wall placement shall be observed and will be verified where a building permit is required.

#### **17.10.180. Signs.**

Signs placed in the R-L zones shall be subject to the requirements and standards prescribed in Chapter 17.56.

Analysis: Signage within single-family residential zones is generally limited to temporary signs (political signs), and subject to the requirements of Chapter 17.56.

### 17.10.190. General Provisions and Standards.

Structures and the use of structures or land shall be subject to the requirements and standards prescribed in Chapter 17.50.

Conclusion: All requirements of the R-L-5 Low-Density Residential zone district are satisfied in the proposed subdivision or will be satisfied by conditions of approval for future building permits.

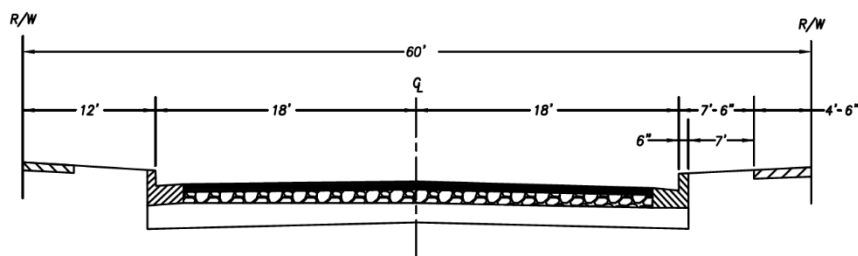
### Subdivisions Improvements

#### Street Improvements:

All streets within the subdivision will be developed to residential street standards (City standard ST-33 cul-de-sacs and ST-32 residential through streets), except the following:

## SECTION C-C INTERIOR STREETS

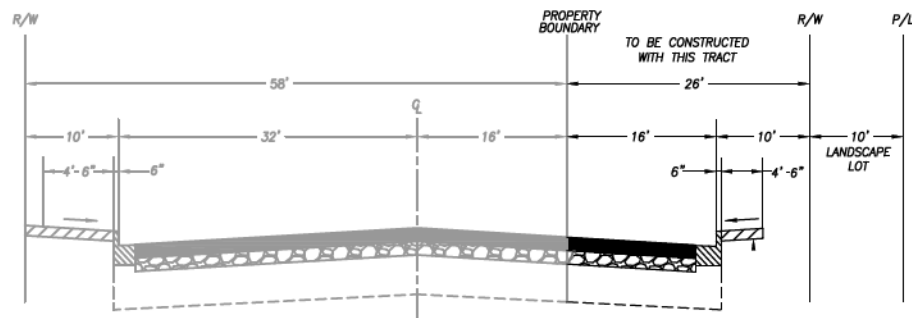
NOT TO SCALE  
PER CITY STD. ST-32



- a) Aquifer Drive will be developed as a Major Collector street with an 84-foot right-of-way width in conformance with City Std. ST-17 and ST-23 and a traffic index of 8. The Developer is required to construct the remaining width of right of way on the east side of Aquifer Drive from Spring Crest to Hanford Armona Road and along both east and west boundary of property being developed south of Spring Crest Drive to Hume Avenue. North of the project boundary, curb and gutter as well as the curb return at the southeast corner of Hanford Armona Road and Aquifer Drive, is required to be installed. Sidewalk is permitted to be deferred until such time as the "Not A Part" parcel is developed.

## SECTION A-A AQUIFER DRIVE

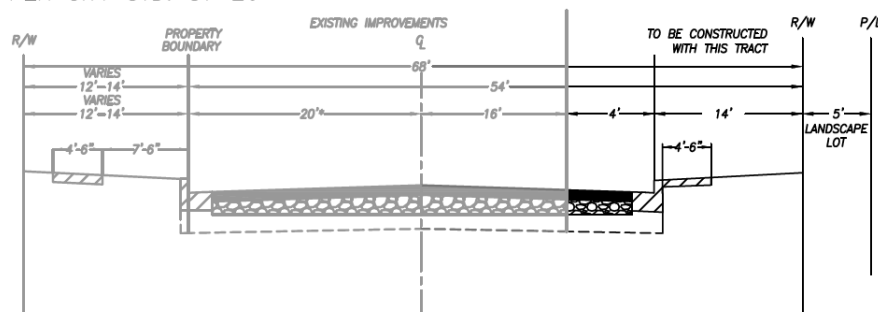
NOT TO SCALE  
PER CITY STD. ST-23 (REVISED)



- b) Spring Crest Drive will be developed as a Minor Collector street with a 68-foot-width in conformance with City Standard Detail ST-17 and ST-26 with a traffic index of 6. The developer will be required to construct the remaining width of right of way on the south side of Spring Crest Drive from the west boundary of the development to Aquifer Drive.

## SECTION B-B W SPRING CREST DRIVE

NOT TO SCALE  
PER CITY STD. ST-26



- c) Hume Avenue will be developed as a Major Collector street with an 88-foot right-of-way width in conformance with City Standard Detail ST-17 and ST-23, modified to allow for additional park strip behind curb with a traffic index of 8. The Developer will only be required to construct two-thirds (2/3) road width along project frontage. The eastbound lane will include a 12-foot travel lane with a four-foot paved shoulder and a four-foot unpaved shoulder containing a swale. If Tract 943 develops prior to Live Oak North Tract 909, the striping for Hume Avenue shall consist of matching the centerline striping, as installed with Live Oak North Tract 902. If Live Oak North Tract 909 develops Hume Avenue prior to Tract 943, then striping shall be removed and a 14 foot continuous left turn lane shall be installed from Aquifer Drive to 12<sup>th</sup> Avenue.



3. The development is subject to a transportation mitigation impact fee, as required by City Ordinance No. 90-09 and any revisions thereof. The developer shall be entitled to a credit against subject development fee for improvements constructed by developer within Hume Avenue and Aquifer Drive, consisting of 22 feet of asphalt pavement section, as measured from centerline of road.

#### Backup Parkway Improvements

The developer will design and construct the following improvements along Hume Avenue, Spring Crest Drive and Aquifer Drive frontages of proposed subdivision.

- a) A six (6) ft. minimum high ornamental, masonry block fence with continuous footing. Wall shall be treated with an anti-graffiti repellent.
- b) A 4 ½ ft. wide sidewalk per City Standard Detail CO-14.
- c) Soil preparation, automatic irrigation and landscaping.
- d) Landscape plans for right-of-way and 12 ft. wide landscape easement area along Hume Avenue property frontage from the back of curb to the block wall.

#### Sewer Improvements

The developer's engineer will provide a sanitary sewer master plan with calculations for the entire subdivision that coincides with the Live Oak West Sanitary Sewer Master Plans prior to recording a subdivision final map for the development. Consideration shall be given for future areas of development located adjacent to proposed subdivision per the City Sanitary Sewer Master Plan.

A minimum 15-inch diameter sanitary sewer main is required to be installed within Aquifer Drive between Spring Crest Drive and Hume Avenue, subject to reimbursement for oversizing, in accordance with the Municipal Code Section 13.08.

The developer is required to install a sanitary sewer lift station, per the Live Oak West Sanitary Sewer Master Plan, to be located at the southwest corner of Hume Avenue and Aquifer Drive.

A 6-inch diameter sanitary sewer force main is required to be installed within Hume Avenue from the sanitary sewer lift station west of Aquifer Drive along development frontage and connecting to an existing gravity manhole at the east project boundary, subject to reimbursement for oversizing, in accordance with the Municipal Code Section 13.08.

#### Storm Drainage Improvements

The developer's engineer will provide a storm drainage master plan, complete with calculations for the entire subdivision prior to recording a subdivision final map for the development. The developer will complete construction of the storm drain basin within the first phase of the subdivision. The basin is required to be designed in conformance with the City of Hanford's Storm Drainage Design Criteria specifications and is required to include a six (6) ft. minimum high ornamental, masonry block fence with continuous footing along the Aquifer Drive and Hume Avenue frontages, a 24' wide drive approach per City Standard Detail CO-41 and access gates per City Standard Detail GE-26. A chain-link fence with continuous footing per City Standard Detail GE-23 shall be constructed along non street basin boundaries. The developer is required

to comply with the State of California Water Resources Control Board requirements specifically related to the National Pollution Elimination System Permit process.

### Water System

The developer's engineer is required to provide a Water System Master Plan complete with calculations for the entire subdivision for City review and approval prior to recording a subdivision final map for the first phase of development. Consideration shall be given for future areas of development located adjacent to proposed subdivision, as shown on the city Water Master Plan. A minimum 18-inch diameter water main and appurtenances, will be extended along property frontage within Aquifer Avenue. The applicant shall be entitled to a refund for water main oversizing in accordance with City Municipal Code Section 13.04. A minimum 12-inch diameter water main and appurtenances will be extended along the property frontage within Hume Avenue. Applicant shall be entitled to a refund for water main oversizing in accordance with City Municipal Code Section 13.04.

All existing water wells will be abandoned, in conformance with State of California Department of Health Standards.

### Easements and Dedications

All easements will be designated on the final subdivision map, as required by the utility companies and where needed for providing service to streetlights and landscape improvements, as designated by the City Public Utilities and Engineering Division.

1. A 20-foot easement established south of the centerline of Hume Avenue is required to be dedicated to the city for the purposes of street right-of-way.
2. An easement for storm drainage purposes is required to be dedicated to the City, where necessary, to facilitate installation of storm drainage facilities connecting the portion of the development located on the west side of Aquifer Drive to the proposed storm drainage basin located on the east side of Aquifer Drive.
3. All easements for irrigation ditches and/or irrigation pipelines will be legally abandoned or relocated to the satisfaction of the City Engineer prior to acceptance of the subdivision improvements.
4. An easement for sanitary sewer along the south side of Hume Avenue for gravity sewer pipeline, sewer lift station and force main is required to be dedicated to the city. This dedication requirement is contingent on whether Tract 943 develops before Live Oak West Tract 909.
5. All proposed landscape/public utility easements, as shown on the tentative map, are required to be dedicated to the City and be included on the subdivision final map.

### Assessment District

The developer will enter into an agreement with the City for the formation of a community facilities district tax assessment district for the maintenance of landscaping, decorative block wall/ fencing, roadways, streetlights, curb and gutter, sidewalk, signage, storm drain system and basin and emergency services.

Neighborhood Park.

***Goal O9: Parks provided at a combined ratio of 3.5 acres per 1,000 residents.***

***Utilizing Quimby Act, park space for new development shall be provided at a ratio of 3 acres per 1,000 residents.***

In accordance with the Quimby Act, open space shall be provided at a ratio of three acres per 1,000 residents. Using the assumption that the average household is 3.67 persons (based on current census data for Kings County), the projected number of residents for the subdivision is 1,196 persons, a minimum of 3.8 acres of park space is required for the subdivision.

**Calculation:**

$$326 \text{ units} \times 3.67 \text{ persons per household} = 1196 \text{ persons}$$

$$1196 \text{ residents} \div 1,000 = 1.196$$

$$1.196 \times 3 \text{ acres} = 3.58 \text{ acres of park space required}$$

The applicant proposes a 3.58-acre park within Phase I of the subdivision. As a condition of approval of a final subdivision map or parcel map, the subdivider shall dedicate land, pay a fee in lieu thereof, or both, at the option of the city, for park or recreational purposes, at the time and according to the standards and formula contained in this title. The land, fees, or combinations thereof, are to be used only for the purpose of providing park or recreational facilities to serve the subdivision.

The park is a neighborhood park and features eyes-on-park development, as houses face the park from all sides, which is consistent with General Plan Policy O64.

**Policy O64 Park Visibility:**

Parks shall be designed to promote a safe and clean environment for recreation. New neighborhoods shall be designed so that common side and rear residential property lines with parks are minimized and visibility of parks from public streets is maximized.

Analysis: There are residential streets surrounding the park. Visibility is achieved from lots facing and siding onto the streets surrounding the park.

**Figure 8:  
Park Visibility**

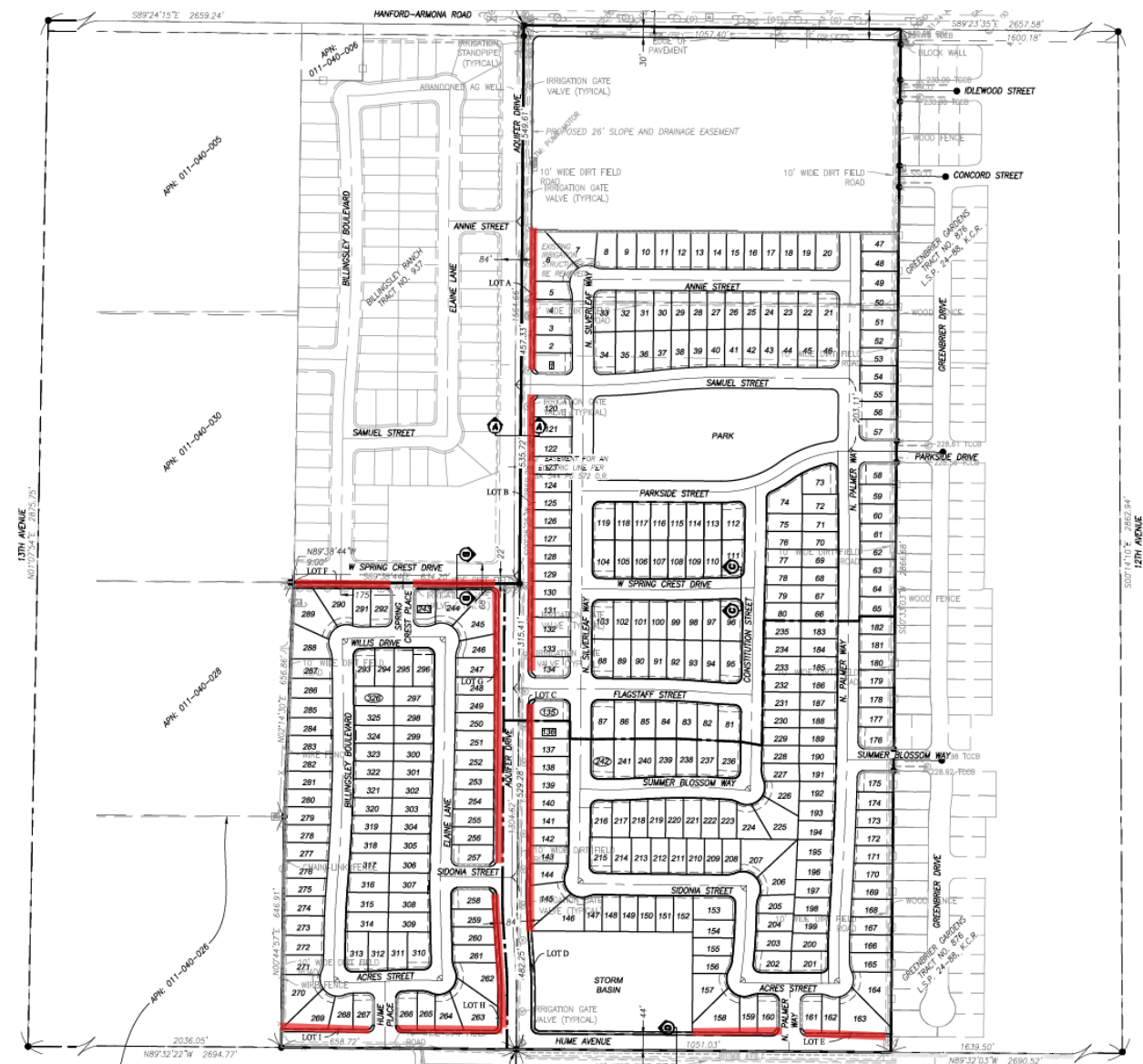


Green = Lots facing the park

### **Restricted Access:**

A one-foot reservation strip will be established at the end or sides of the roads abutting unsubdivided property and indicated on the subdivision final map. All access will be restricted from the Hume Avenue, Aquifer Drive and Spring Crest Drive right-of-way for lots backing or siding onto said rights-of-way. A restricted access designation will be depicted on all recorded final maps. The developer is required to construct a barricade, to City standards, at the end of each future through streets.

**Figure 9: Location of Restricted Access (shown in red)**



## FINDINGS FOR APPROVAL

## **Annexation No. 161**

The Hanford Planning Commission is charged with reviewing the proposed annexation and making a finding of consistency with the Hanford General Plan to forward to the City Council.

Annexation 161 is consistent with the Hanford General Plan Policy L15 and L17.

## Policy L15 Initiation of Annexations

Consider initiation of annexation of land into the City of Hanford only when the following criteria are met:

1. The land is within the Primary Sphere of Influence.

Analysis: The property proposed to be annexed is within the City's Primary Sphere of Influence, as shown in **Attachment 3**.

2. The capacity of the water, sewer, fire, school, and police services are adequate to service the area to be annexed, or will be adequate at the time that development occurs.

Analysis: The capacity of water, sewer, fire, school, and police services is adequate to service the area to be annexed at the time development occurs.

A Plan for Services has been prepared by Engineering for Water, Sanitary Sewer, and Storm Drainage, based on the proposed development of the annexation area.

#### Sewer Improvements

The developer's engineer will provide a sanitary sewer master plan with calculations for the entire subdivision that coincides with the Live Oak West Sanitary Sewer Master Plans prior to recording a subdivision final map for the development. Consideration shall be given for future areas of development located adjacent to proposed subdivision per the City Sanitary Sewer Master Plan.

A minimum 15-inch diameter sanitary sewer main is required to be installed within Aquifer Drive between Spring Crest Drive and Hume Avenue, subject to reimbursement for oversizing, in accordance with the Municipal Code Section 13.08.

The developer is required to install a sanitary sewer lift station, per the Live Oak West Sanitary Sewer Master Plan, to be located at the southwest corner of Hume Avenue and Aquifer Drive.

A 6-inch diameter sanitary sewer force main is required to be installed within Hume Avenue from the sanitary sewer lift station west of Aquifer Drive along development frontage and connecting to an existing gravity manhole at the east project boundary, subject to reimbursement for oversizing, in accordance with the Municipal Code Section 13.08.

#### Storm Drainage Improvements

The developer's engineer will provide a storm drainage master plan, complete with calculations for the entire subdivision prior to recording a subdivision final map for the development. The developer will complete construction of the storm drain basin within the first phase of the subdivision. The basin is required to be designed in conformance with the City of Hanford's Storm Drainage Design Criteria specifications and is required to include a six (6) ft. minimum high ornamental, masonry block fence with continuous footing along the Aquifer Drive and Hume Avenue frontages, a 24' wide drive approach per City Standard Detail CO-41 and access gates per City Standard Detail GE-26. A chain-link fence with continuous footing per City Standard Detail GE-23 shall be constructed along non street basin boundaries. The developer is required to comply with the State of California Water Resources Control Board requirements specifically related to the National Pollution Elimination System Permit process.



### Water System

The developer's engineer is required to provide a Water System Master Plan complete with calculations for the entire subdivision for City review and approval prior to recording a subdivision final map for the first phase of development. Consideration shall be given for future areas of development located adjacent to proposed subdivision, as shown on the city Water Master Plan. A minimum 18-inch diameter water main and appurtenances, will be extended along property frontage within Aquifer Avenue. The applicant shall be entitled to a refund for water main oversizing in accordance with City Municipal Code Section 13.04. A minimum 12-inch diameter water main and appurtenances will be extended along the property frontage within Hume Avenue. Applicant shall be entitled to a refund for water main oversizing in accordance with City Municipal Code Section 13.04.

All existing water wells will be abandoned, in conformance with State of California Department of Health Standards.

### Fire and Police

Fire and police services are adequate to service the area to be annexed. Impacts to fire and police services will be mitigated through payment of impact fees.

### School

Educational services needed for the development of the Project will be provided by the Hanford Elementary School District (HESD) and Hanford Joint Union High School District (HJUHS). Payment of fees to a school district is considered mitigation for project impacts on school facilities (Government Code Section 65996(a)). Therefore, the project applicant would be required to pay the statutory fees to accommodate the impact of project-generated student.

Notice of the proposed project was sent to the interested agencies for pre-consultation and normal consultation. A response was received by the Hanford Joint Union High School District stating, "This area is within our most impacted school boundary."

The City's role in development and managing school sites and programs is limited. The various school districts truly govern where a new school site would be located and when it would be necessary to construct or expand facilities, in order to adequately accommodate population growth. Elected governing school boards are responsible for budgeting and decision-making and the State Department of Education establishes school site and construction standards. The General Plan provides policy which focuses on collaboration with school districts in determining new school locations and utilizing school facilities for general public needs. School districts would be able to utilize the General Plan, along with other plans, standards, and codes, to establish new school sites and to make decisions on school amenities and cohesiveness with the surrounding area.

3. Land for development within the City limits is insufficient to meet the current land use needs.

Analysis: The applicant is proposing a 75.02-acre single-family residential development in the southwest planning area. Available land for new development within the Low-Density

Residential land use designation is limited in the southwest planning area of the City. The majority of the properties designated for Low-Density Residential development have been developed or entitled, as shown in Figure 6. The proposal is considered an implementation of the General Plan.

4. The territory to be annexed is contiguous to existing developed areas.

Analysis: The territory to be annexed is directly contiguous to the current City limits to the north, south, and east.

### **Policy L17 Plan for Services**

Prepare and make publicly available a written Plan for Services that describes how urban services will be provided prior to initiating an annexation.

Analysis: A Plan for Services has been prepared by Engineering for Water, Sanitary Sewer, and Storm Drainage, based on the proposed development of the annexation area - **Attachment 4**.

### **Favorable Factors for Annexation**

Favorable and unfavorable factors for annexation have been adopted by LAFCO. The existence of favorable or unfavorable factors should not decide approval or denial; however, a substantial number of favorable or unfavorable factors may determine approval or denial of the proposal.

1. The proposed area is close to urban development and municipal-type services and would enhance its potential for full development.

Analysis: The proposed area is close to the existing City limits and is a logical extension of the City. The annexation area can be served by municipal-type services. The annexation area is designated as Low-Density Residential by the General Plan and is necessary to accommodate growth within the City of Hanford. The development proposed for the annexation area is consistent with the General Plan.

2. The proposed annexation conforms to the adopted General Plan.

Analysis: The annexation area is proposed to be developed as a single-family residential subdivision. The subdivision is consistent with the General Plan designation, Low-Density Residential. The annexation is consistent with the General Plan Section 3.2.4, which states, "Annexation of land into Hanford allows previously undeveloped land to become available for development and allows the City of Hanford to provide the territory that is annexed with its full range of City services." The annexation area is also consistent with Policy L15 and L17 of the General Plan, as analyzed above.

3. The proposed area is consistent with the sphere of influence.

Analysis: The property proposed to be annexed is within the City's Primary Sphere of Influence, as shown in **Attachment 3**.

4. The proposed annexation comes with 100% consent of all landowners.

Analysis: There are three parcels proposed to be annexed. The annexation comes with 100% consent the property owners. The signed annexation application is attached – **Attachment 5.**

### **Prezone No. 0005-23**

In accordance with the Hanford Municipal Code Section 17.86.030, before a zone change may be approved, all of the following findings shall be made by the reviewing authority:

1. That the amendment is internally consistent with the goals, objectives, and policies of the General Plan and the Municipal Code.

Analysis: That Prezone No. 0005-23 is internally consistent with the goals, objectives, and policies of the General Plan, specifically consistent with Land Use Policies L15 and L17. The development proposed in the annexation area, under Vesting Tentative Tract 943, conforms with all regulations pertaining to the R-L-5 Low-Density Residential zone district.

2. That the amendment would not be detrimental to the public health, safety, or welfare of the community.

ANALYSIS: That this application has been reviewed by County departments, utility companies, City Fire Department, City Building Department, and other involved departments. Any mitigation required for public health and safety were applied to the proposal and required in the mitigation monitoring and reporting program.

3. That the amendment would maintain the appropriate balance of land uses within the City.

Analysis: That jobs-housing balance is achieved by increasing opportunities for people to work and live in close proximity. The ratio is expressed as the number of jobs divided by the number of housing units. The jobs-housing balance is a general tool for analyzing where people work, where they live, and how effectively they can travel between the two. In the planning area, the existing jobs-housing balance ratio in 2013-2014 was 1.17. It is estimated that the implementation of the General Plan would increase the jobs-housing balance by 0.45 to 1.62, which would make the planning area a jobs-rich area. The prezone is considered an implementation of the General Plan, which designates the project site as Low-Density Residential with a “floating” Future Educational Facility designation, not required for this location.

4. That the anticipated land uses on the subject site would be compatible with existing and future surrounding uses.

Analysis: That the anticipated land uses on the subject site are low-density residential, as proposed under Tentative Tract 943, which is compatible with planned single-family residential developments in the surrounding area (see Figure 6).

### **Tentative Tract Map 943:**

Pursuant to Section 16.04.010 of the Hanford Subdivision Ordinance, Section 66474 of the Subdivision Map Act, and Hanford’s Zoning Ordinance, the following findings can be made by the Planning Commission:

1. Consistency Finding:

ANALYSIS: That a consistency finding can be made, because the proposed subdivision map is consistent with the State Subdivision Map Act, General Plan, Zoning Ordinance, and Subdivision Ordinance. The subdivision is consistent with the General Plan Designation for the property, Low-Density Residential. All requirements of the R-L-5 Low-Density Residential zone district are met for lot size, frontage, width, and depth. Compliance with the regulations set forth in the Hanford Municipal Code for the R-L-5 Low-Density Residential zone district will be a condition of approval for the subdivision.

2. Design Finding:

ANALYSIS: That the design and improvement of the subdivision is consistent with the State Subdivision Map Act, General Plan, Zoning Ordinance, and Subdivision Ordinance. The subdivision is consistent with the General Plan Designation for the property, Low-Density Residential. All requirements of the R-L-5 Low-Density Residential zone district are met for lot size, frontage, width, and depth. Compliance with the regulations set forth in the Hanford Municipal Code for the R-L-5 Low-Density Residential zone district will be a condition of approval for the subdivision.

3. Type of Development Finding:

ANALYSIS: That the site is physically suitable for the single-family residential development proposed under Tentative Tract 943. The lots proposed meet the minimum lot size of the R-L-5 Low-Density Residential Zone District. All parcels have adequate street frontage on a public street and meet the minimum depth and width required for the district.

4. Density Finding:

ANALYSIS: That a density finding can be made, because the site is physically suitable for the proposed density of development. The General Plan prescribes a density range between two and 10 units per acre, with an expected average of four units per gross acre. The project has a density of 4.35 dwelling units per gross acre.

5. Environmental Finding:

ANALYSIS: That a focused environmental impact report was prepared for the project. On the basis of the Focused EIR, the City of Hanford, as the Lead Agency, has determined the project described above would have a significant effect on the environment based relating to the project's transportation/traffic impacts and recommended a Statement of Overriding Considerations be adopted for the project's significant impact.

6. Public Health Finding:

ANALYSIS: That the design of the subdivision and type of improvements are not likely to cause serious health problems. The City of Hanford Building Division is responsible for ensuring that future construction of the site follows adopted building codes, thus reducing exposures to accidents to the general public. Consultation was sent for Tentative Tract 943 to interested agencies, including the County Health Department, Public Works Department, Fire Department, and Building Division. Any improvements or mitigations

required for public health and safety were applied to the proposal and required in the conditions of approval and the mitigation monitoring and reporting program.

7. Improvements and Access Findings:

ANALYSIS: That the design of the subdivision and type of improvements will not conflict with easements acquired by the public at large for access through or use of the property within the proposed subdivision. All easements will be designated on the final subdivision map, as required by the utility companies and where needed for providing service to streetlights and landscape improvements, as designated by the City Public Utilities and Engineering Division. Additional easements are required, as follows:

- a) A 20-foot easement established south of the centerline of Hume Avenue is required to be dedicated to the city for the purposes of street right-of-way.
- b) An easement for storm drainage purposes is required to be dedicated to the City, where necessary, to facilitate installation of storm drainage facilities connecting the portion of the development located on the west side of Aquifer Drive to the proposed storm drainage basin located on the east side of Aquifer Drive.
- c) All easements for irrigation ditches and/or irrigation pipelines will be legally abandoned or relocated to the satisfaction of the City Engineer prior to acceptance of the subdivision improvements.
- d) An easement for sanitary sewer along the south side of Hume Avenue for gravity sewer pipeline, sewer lift station and force main is required to be dedicated to the city. This dedication requirement is contingent on whether Tract 943 develops before Live Oak West Tract 909.
- e) All proposed landscape/public utility easements, as shown on the tentative map, are required to be dedicated to the City and be included on the subdivision final map.

## ENVIRONMENTAL ASSESSMENT

The City of Hanford is the Lead Agency for the purposes of compliance with the California Environmental Quality Act (CEQA). A focused environmental impact report has been prepared for the project, State Clearinghouse No. 2024060956, in accordance with the Guidelines for Implementation of the California Environmental Quality Act. The Final and Draft Focused EIR, herein incorporated by reference, have analyzed the potential impacts of the proposed project.

### Initial Study – Attachment 6

An initial study was prepared for the project and determined there to be No Impact or a Less than Significant Impact to the following categories:

- Aesthetics
- Agriculture and Forest Resources
- Air Quality
- Biological Resources
- Cultural Resources

- Energy
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Mineral Resources
- Noise
- Population and Housing
- Public Services
- Recreation
- Tribal Cultural Resources
- Utilities and Service Systems
- Wildfire

Potentially Significant and Unavoidable Impacts were identified for the project's Land Use and Transportation and Traffic Impact.

|  | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|

### ***LAND USE AND PLANNING***

Would the Project:

- b. Cause a significant environmental impact due to a conflict with any land use plan, policy or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

|                                     |                          |                          |                          |
|-------------------------------------|--------------------------|--------------------------|--------------------------|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|-------------------------------------|--------------------------|--------------------------|--------------------------|

**Impact #3.4.11b – Would the Project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?**

The Land Use and Planning section of the focused EIR will evaluate the consistency of the proposed project with City General Plan policies, zoning regulations, and LAFCo policies adopted for the purpose of avoiding or mitigating an environmental impact, pursuant to Appendix G of CEQA Guidelines in the EIR.

|  | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|

### ***TRANSPORTATION AND TRAFFIC***

Would the Project:

|                                                                                                                                                        | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------------------|
| a. Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities? | <input checked="" type="checkbox"/>  | <input type="checkbox"/>                                       | <input type="checkbox"/>            | <input type="checkbox"/> |
| b. Conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b)?                                                                  | <input checked="" type="checkbox"/>  | <input type="checkbox"/>                                       | <input type="checkbox"/>            | <input type="checkbox"/> |

### ***Discussion***

#### **Impact #3.4.17a – Would the Project conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?**

The subject Project site is located south of Hanford Armona Road between Greenbrier Driver to the east and 13<sup>th</sup> Avenue to the west. The Project could potentially significantly impact the local circulation system and level of service at nearby intersections. A Traffic Impact Analysis will be prepared and impacts to the circulation system will be analyzed in the EIR.

#### **Impact #3.4.17b – Would the Project conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b)?**

CEQA Guidelines Section 15064.3 subdivision (b) was adopted in December 2018 by the California Natural Resources Agency. These revisions to the CEQA Guidelines criteria for determining the significance of transportation impacts shift the focus from driver delay to a reduction of vehicular greenhouse gas emissions through the creation of multimodal vehicle trips. Vehicle miles traveled (VMT) is a measure of the total number of miles driven for various purposes and is sometimes expressed as an average per trip or per person.

In the case of this Project, the anticipated VMT impacts could potentially exceed established significance thresholds. As such, an in-depth VMT analysis is required and will be further analyzed in the EIR.

#### **Notice of Preparation of Draft Focused Environmental Impact Report (30-day review period)**

On June 21, 2024 the City of Hanford provided a Notice of Preparation of the Focused EIR, advising the public, interested parties and agencies that the City of Hanford, as lead agency, would be preparing a focused environmental impact report for the proposed Silicon Valley Ranch Residential Project. A 30-day comment period was open from June 21 through July 22, 2024.

See Notice of Preparation – **Attachment 7**.

During the Notice of Preparation Period, comments were received from:

1. The Department of Toxic Substances Control – Received July 9, 2024



Responses to the comments received are incorporated into the Draft Environmental Impact Report and attached – **Attachment 8**.

#### Scoping Meeting

A scoping session was held on July 8, 2024 at 5:00 p.m. in the the Training Room (319 N Douty Street, Hanford, CA 93230) of City Hall. No comments were received during that meeting.

#### Notice of Availability of Draft Focused Environmental Impact Report (45-day review period)

Following the initial 30-day comment period, a Draft Focused Environmental Impact was prepared and made available to the public, nearby residents, property owners, responsible agencies, and other interested parties for a 45-day review and comment period from November 25 to January 9, 2025.

See Notice of Availability – **Attachment 9**.

No comments were received during the review period.

**Table 1-1  
Summary of Significant Impacts of the Project**

| <b>Resources</b>       | <b>Project Impacts</b>                                                                                                                                                                                                                                                                                                                        | <b>Cumulative Impacts</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Land Use<br>Impact 4.1 | <p>As evaluated in detail in Table 4.1-2, the Project is consistent with the goals and policies of the City of Hanford General Plan and Kings County General Plan.</p> <p>The Project is consistent with both Kings County and City of Hanford General Plan policy.</p> <p>Therefore, impacts are considered <i>less than significant</i></p> | <p>Potential land use impacts require evaluation on a case-by-case basis because of the interactive effects of a specific development and its immediate environment. Other projects being proposed in the area would similarly be analyzed for consistency with the pertinent City General Plan and Kings County General Plan goals and policies.</p> <p>Therefore, as proposed the Project would be consistent with the goals and policies of the City's General Plan and would therefore not contribute to a cumulatively considerable impact regarding land use. Cumulative impacts are <i>less than significant</i>.</p> |

| Resources                             | Project Impacts                                                                                                                                                                                                                                                                                                                                                                                | Cumulative Impacts                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Transportation and Traffic Impact 4.1 | The Project will impact the 12 <sup>th</sup> Avenue and Hanford Armona Road intersection. It is recommended that the existing eastbound right turn lane will change to an eastbound through and right turn lane. Implementation of MM 4.2-1 would allow the studied intersection to operate at an acceptable LOS under City LOS standards and reduce impacts to <i>less than significant</i> . | Cumulative impacts are assessed with the proposed Project and the 12 projects located within a one-half mile of the Project site as identified by the City of Hanford. Eleven of the 12 projects are entitled and either under construction or are anticipated to be under construction in the future. The projects that are entitled are included in and are consistent with the General Plan. Therefore, they are included in the KCAG travel demand model. The growth rates used to determine future traffic volumes would therefore reflect traffic from these projects. Cumulative impacts related to LOS would be <i>less than significant with mitigation measures incorporated</i> . |
| Transportation and Traffic Impact 4.2 | Due to the Project's location, it was determined that Vehicle Miles Travelled (VMT) would exceed the City of Hanford's adopted VMT per capita threshold. No applicable and feasible mitigation measures were identified to reduce VMT below thresholds. Therefore, impacts are considered <i>significant and unavoidable</i> .                                                                 | Because the proposed Project is determined to have a significant and unavoidable impact by exceeding VMT thresholds on a project level, the cumulative impacts would also be considered <i>significant and unavoidable</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

As previously identified, impacts to Transportation and Traffic were found to be significant and unavoidable. As discussed in the Draft Focused EIR and Final Focused EIR, mitigation measures have been included to reduce the level of significance to the highest extent possible, however, impacts remain significant and unavoidable. A Statement of Overriding Considerations is required when impacts remain significant and unavoidable.

Therefore, included in the recommendation to adopt Resolution No. 2025-01, recommending certification of Focused EIR SCH #2024060956 to the City Council, is a request to recommend approval of the Findings of Fact, Section 15091 for the findings related to significant environmental impacts – **Attachment 10**, and the Statement of Overriding Considerations, Section 15093 – **Attachment 11**.

## **PUBLIC COMMENTS**

Notice of the public hearing and notice of the Focused Environmental Impact Report was noticed in the Hanford Sentinel on November 21, 2024 and mailed to property owners within 300 feet of the project site on November 20, 2024. No public comments have been received as of the date of preparation of this report.

## **RECOMMENDATION**

Staff recommends that the Planning Commission:

1. Adopt Resolution No. 2025-01, recommending certification of Focused EIR SCH #2024060956 to the City Council.
2. Adopt Resolution 2025-02, recommending approval of Prezone No. 0005-23 to the City Council.
3. Find that the proposed Annexation No. 161 is consistent with the Hanford General Plan Policies L15 and L17 and forward Annexation No. 161 to the City Council, with a recommendation that an application be made to the Local Agency Formation Commission (LAFCO) of Kings County.
4. Adopt Resolution 2025-03, recommending approval of Vesting Tentative Tract 943 to the City Council.

### **Owner:**

Philip Boyce  
Silicon Valley Ranch  
20900 Boyce Lane  
Saratoga, CA 95070

### **Applicant:**

Marc Frelie – Silicon Valley Ranch, LLC  
20900 Boyce Lane  
Saratoga, CA 95070

### **Consulting Firm –Environmental**

QK Inc. – Jaymie L. Brauer  
5080 California Avenue, Suite 220  
Bakersfield, CA 93309

### **Consulting Firm –Engineering**

QK Inc. – Alex Dwiggin  
609 N. Irwin Street  
Hanford, CA 93230

## **RESOLUTION 2025-01**

**A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF HANFORD RECOMMENDING CERTIFICATION OF THE FINAL FOCUSED ENVIRONMENTAL IMPACT REPORT PREPARED FOR SILICON VALLEY RANCH RESIDENTIAL PROJECT TO THE CITY COUNCIL OF THE CITY OF HANFORD. THE PROJECT IS LOCATED SOUTH OF HANFORD-ARMONA ROAD, BETWEEN 12<sup>TH</sup> AND 13<sup>TH</sup> AVENUES (APN 011-040-008, -010, AND -027).**

### **STATE CLEARINGHOUSE #2024060956**

At a regular meeting of the Planning Commission of the City of Hanford duly called and held on January 14, 2025, by motion of Commissioner \_\_\_\_\_, and seconded by Commissioner \_\_\_\_\_, and duly carried, the following resolution was adopted:

**WHEREAS**, pursuant to the requirements of the California Environmental Quality Act (CEQA), the City of Hanford prepared an initial study for the Silicon Valley Ranch Residential Project, Annexation 161, Prezone No. 0005-23, and Vesting Tentative Tract 943; and

**WHEREAS**, pursuant to the requirements of CEQA, the City of Hanford prepared a Notice of Preparation (NOP), which was sent to the State Clearinghouse to solicit statewide agency participation in determining the scope of the Draft Focused Environmental Impact Report (Draft Focused EIR); and

**WHEREAS**, the NOP was released for a 30-day period, during which the NOP was also posted at the State Clearinghouse, CEQANet, and the City of Hanford's website; and

**WHEREAS**, the City of Hanford prepared written responses to all comments received on the Draft Focused EIR and compiled those comments into a Final Focused EIR, which was completed in accordance with CEQA and was distributed to the commenting agencies and individuals on November 22, 2024; and

**WHEREAS**, the Final Focused Environmental Impact Report consisted of the Initial Study, Draft Focused EIR and revisions of or additions to, the Draft Focused EIR, the written comments, responses to comments by the City of Hanford to significant environmental points raised in the review and consultation process, errata to the foregoing and other information added by the City of Hanford as specified in the EIR; and

**WHEREAS**, the Planning Commission held a public hearing on the proposed project and Final Focused EIR on January 14, 2025 and took public comment; and

**WHEREAS**, the Planning Commission of the City of Hanford has reviewed and considered the Final Focused EIR prepared for the Silicon Valley Ranch Residential Project, in its entirety, and has determined that it reflects the independent judgment of the City of Hanford; and

**WHEREAS**, the City of Hanford is required under CEQA to adopt all feasible mitigation measures or feasible project alternatives that can substantially lessen or avoid any significant project related effects; and

**WHEREAS**, the Project's effect on Transportation and Traffic remains significant and unavoidable, despite the adoption of the mitigation measures; and

**WHEREAS**, because of adoption of all feasible mitigation measures cannot substantially lessen the or avoid all significant effects on the environment that will result from the project, the

Planning Commission must consider the alternatives set forth in the Final Focused EIR that will have a lessened impact on the environment than the proposed project; and

**WHEREAS**, the Planning Commission has determined that for the reasons set forth in the Final Focused EIR, the project is the preferred alternative and that the other alternatives considered are not feasible, do not lessen the impact, or they fail to meet the objectives of the project; and

**WHEREAS**, because the adopted mitigation measures will not fully mitigate all identified significant environmental effects that may result from the proposed project, CEQA requires that the Planning Commission adopt a Statement of Overriding Considerations for those unavoidable effects; and

**WHEREAS**, the Planning Commission of the City of Hanford determined that it is appropriate to recommend certification of the Final Focused EIR and to adopt the Findings of Fact (CEQA 15091) and Statement of Overriding Consideration (CEQA 15093), to the City Council, pursuant to the requirements of CEQA; and

**WHEREAS**, as required by CEQA, the Planning Commission recommends adoption of the Finding of Fact and Statement of Overriding Consideration, due to the Final Focused EIR's identification of significant and unavoidable effects to Transportation and Traffic; and

**NOW, THEREFORE, BE IT RESOLVED**, that the Planning Commission finds that the Silicon Valley Ranch Residential Project, Final Focused Environmental Impact Report, SCH# 2024060956, was prepared in compliance with the California Environmental Quality Act.

**BE IT FURTHER RESOLVED**, that the Planning Commission recommends certification of the Final Focused Environmental Impact Report, SCH# 2024060956, prepared for the Silicon Valley Ranch Residential Project, based on the Findings of Fact contained in **Exhibit A**, hereto, the following specific findings and the evidence in the record:

1. That full and fair public hearings have been held on the Final Focused Environmental Impact Report and the Planning Commission having considered all comments received thereon, said Final Focused Environmental Impact Report is hereby determined to be adequate and complete; and said Focused Environmental Impact Report, SCH#2024060956 is hereby incorporated herein by reference.
2. That the Planning Commission hereby determines that the Final Focused Environmental Impact Report, SCH SCH#2024060956 has been prepared in compliance with the California Environmental Quality Act (CEQA) and the state and local environmental guidelines and regulations, that is has independently reviewed and analyzed the information contained therein, including the written comments received during the EIR review period and the oral comments received at the public hearing; and that the Final Focused EIR represents the independent judgment of the City of Hanford, as the Lead Agency for the project.
3. That the Planning Commission does hereby make the following findings of fact attached to this resolution as **Exhibit A**, which includes a Statement of Overriding Considerations, attached as **Exhibit B**, with respect to the unavoidable significant effect on the environmental resulting from the project, as identified in the Final Focused Environmental Impact Report, SCH#2024060956 with the stipulation that all the information in these findings is intended as a summary of the full administrative record supporting the Final Focused Environmental Impact Report.

**BE IT FURTHER RESOLVED** that the Planning Commission of the City of Hanford recommends adoption of the Statement of Overriding Considerations to the City Council for the project contained in **Exhibit B**. In recommending adoption of the Statement of Overriding Consideration, the Planning Commission hereby finds that the Project has eliminated, or substantially lessened all significant effects on the environment where feasible, and finds that the remaining significant unavoidable impacts resulting from the project are acceptable in light of the environmental, economic, social or other considerations set forth herein because the benefits of the project outweigh the significant and adverse effects to Transportation/Traffic as identified in the Final Focused Environmental Impact Report:

1. **Accommodates the Need for Regional Housing.** At buildout, the Project proposes to construct approximately 326 dwelling units. As discussed in Section 3.4.14 – Population and Housing, the Project would help the City achieve its need to accommodate residential growth. The housing goal for the City of Hanford, according to its Regional Housing Needs Allocation (RHNA), includes the construction of 15,695 additional dwelling units by 2035 to accommodate estimated population growth. The Project would accommodate the need established by the RHNA, the City of Hanford General Plan Housing Element, and the projected population growth of the City of Hanford and surrounding area.
2. **Provides Orderly Expansion and Consistent with General Plan and Zoning Ordinance.** The proposed Project provides new development in an orderly manner and is coordinated with the General Plan provision of infrastructure, public infrastructure, and public improvements. The proposed Project allows for the incremental expansion of infrastructure and public services and provides a high-quality environment for living. In addition, the proposed Project provides a safe and efficient street system that links all Project areas and allows for the movement of both vehicle and non-vehicle traffic. The Project will be required to use and expand upon the existing local road system and contribute to certain regional transportation improvements which will help to develop the transportation system in the area.

Further, the Project would fill in an undeveloped island of county land surrounded by development and will connect to the City's existing infrastructure of roads, water, sewage and drainage. It will also create a new park in the area and connect the dead-end roads along the eastern boundary so that residents have another access to Hanford Armona Road.

3. **Provides More Efficient Use of Land and Existing Resources.** The property was previously farmed with animal feed and fodder such as wheat, milo and corn. Permanent crops such as almonds, pistachios, vineyard and olives were no longer viable due to reduced water availability. The Project will convert the site from agricultural to an urban use. Water for continued crop cultivation is no longer available to the property when the existing infrastructure was cut off by development of a roadway. Also, with the new Sustainable Groundwater Management Act (SGMA) laws the well water would have been inadequate and too expensive to continue farming the entire property.

This is not prime farmland being taken out of production; the proposed Project is considered a higher and better use of the property. Its proximity to State Route 198 and other existing roadways makes it a logical and efficient location for development.

4. **Will Provide Additional Economic Benefits.** Farming the site required less than two workers for the entire year. The economic benefit and revenue were marginal to the City and County. The Project will result in creating affordable housing at lower market rates, in addition to providing good paying construction jobs. Landscaping and yard maintenance costs alone will be larger than the agricultural income currently generated from the property. The construction should also increase the tax base and create more revenue for the City. Construction of 324 new homes selling at an average sales price of \$325,000, would generate an approximate \$105,300,000 value that would be taxed at 1.1 percent. This would generate over \$1,150,000 of property tax income to the City.

**BE IT FURTHER RESOLVED** that the Planning Commission of the City of Hanford hereby determines that the Focused EIR prepared for the Silicon Valley Ranch Project is adequate and complete, pursuant to the requirements of the California Environmental Quality Act and so recommends certification to the City Council.

**PASSED AND ADOPTED** at a regular meeting of the Planning Commission of the City of Hanford by the following vote:

AYES: Commissioners  
NOES: Commissioners  
ABSTAIN: Commissioners  
ABSENT: Commissioners

STATE OF CALIFORNIA)  
COUNTY OF KINGS )ss  
CITY OF HANFORD )

I, **Jason Waters**, Secretary of the Planning Commission of the City of Hanford, do hereby certify the foregoing Resolution was duly passed and adopted by the Planning Commission of the City of Hanford at a regular meeting thereof held on the **14<sup>th</sup> day of January 2025**.

---

Jason Waters, Deputy City Manager  
Secretary of the Planning Commission



**Exhibit A**  
Findings of Fact

**FINDINGS OF FACT IN SUPPORT OF FINDINGS  
RELATED TO SIGNIFICANT ENVIRONMENTAL IMPACTS**

**State CEQA Guidelines Section 15091**

**for**

**Silicon Valley Ranch Residential Development (Tract No. 943) Project**

**Final Environmental Impact Report  
SCH# 2024060956**

**Lead Agency: City of Hanford**

**SECTION I. INTRODUCTION**

The following findings of fact are based in part on the information contained in the draft and final Environmental Impact Report (EIR) for the Silicon Valley Ranch Residential Development Project (Project) as well as additional facts found in the complete record of proceedings. The final focused EIR is hereby incorporated by reference and is available for review at the City of Hanford (City), City of Hanford Community Development Department, 317 N Douty St, Hanford, CA 93230.

**SECTION II. FINDINGS REGARDING THE POTENTIAL ENVIRONMENTAL EFFECTS  
OF THE PROJECT**

The City issued a notice of preparation of a draft focused EIR on June 21, 2024. Based on the initial study, technical studies and Notice of Preparation, a determination was made that the final focused EIR would contain a comprehensive analysis of environmental issues not screened out during the Notice of Preparation. With respect to all impacts identified as “less than significant” or as having “no impact” in the final focused EIR, the Planning Commission finds that those impacts have been described accurately and are less than significant or have no impact. Despite concluding that certain impacts would be less than significant or would have no impact, the final focused EIR nonetheless incorporates mitigation measures in the form of complying with the goals, policies, and implementation measures of the City of Hanford General Plan or other adopted regulations. The Planning Commission finds that these effects are less than significant or have no impact before and after implementation of these mitigation measures.

In addition, one impact in the final focused EIR were found to be “significant and unavoidable.” The Planning Commission finds that this impact has been described accurately and is significant and unavoidable.

**LAND USE AND PLANNING**

***A. Environmental Effects of the Project Found to Have No Impact on the Environment or Have a Less Than Significant Impact on the Environment.***

*The Project could cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect (Impact 4.2-1)*

The City of Hanford General Plan establishes land use policies and regulations that are applicable to the Project. In addition to the City of Hanford General Plan, applicable policies and regulations of the Kings County General Plan and Kings County LAFCo were identified as they pertain to annexations of land.

The Project site has a General Plan designation of Low Density Residential and would be rezoned R-L-5. Per the City General Plan zoning matrix, the R-L-5 zone district is compatible with the General Plan designation. Approval of the tentative map subject to the provisions of the City of Hanford municipal code would allow subdivision of the Project area into lot sizes consistent with the R-L-5 zone district. Pursuant to Table 17.08.020, the proposed development of single-family dwellings throughout the subdivided Project area are permitted uses under the R-L-5 zone district.

The Project is consistent with the goals and policies of the City of Hanford General Plan and Kings County General Plan. Therefore, the Project would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigation an environmental effect. Impacts of the Project are less than significant, and no mitigation is required.

***B. Environmental Effects of the Project that Are Potentially Significant, but that Can Be Mitigated to Less Than Significant Levels.***

The Project would not have any environmental effects on land use and planning that are potentially significant and that can be mitigated to less than significant levels.

***C. Effects of the Project that Cannot Be Mitigated to a Level Less Than Significant.***

The Project would not have any environmental effects on land use and planning that cannot be mitigated to a less than significant level.

**Findings**

The proposed Project would not have any potentially significant environmental effects related to land use and planning. No mitigation would be required, and impacts are less than significant.

**Level of Significance**

Impacts would be less than significant.

**Brief Explanation of the Rationale for the Finding**

CEQA requires that all feasible and reasonable mitigation be applied to the project to avoid or substantially lessen significant impacts. However, impacts related to land use and planning would be less than significant, and no mitigation measures are required.

***D. Cumulative Environmental Effects of the Proposed Project that Would Have a Less Than Significant Impact on the Environment.***

As discussed in the Cumulative Project List section of the draft EIR, 12 similar projects are proposed within a one and a half-mile radius of the proposed Project, the geographic scope being the City of Hanford General Plan planning area. The Project and future development are required to be consistent with the City of Hanford General Plan and other applicable planning documents. Cumulative projects requiring additional

consideration including rezones, General Plan Amendments, and annexation would require approval by the County. Consistency with the City's applicable General Plan policies and Zoning Ordinance (and any other applicable planning documents) would ensure compliance and orderly development of the proposed Project and other related cumulative projects. Additionally, all cumulative projects are subject to environmental review and compliance with all federal, State, and local policies and plans. As such, the proposed Project's incremental contribution to the less than significant cumulative impacts would not be cumulatively considerable. Cumulative impacts related to land use and planning would result in a less than significant impact on the environment.

***E. Cumulative Environmental Effects of the Proposed Project that Would Have a Significant Impact on the Environment.***

The Project would not have any cumulative effects on land use and planning that would have a significant impact.

**Findings**

The proposed Project would not have any potentially cumulative significant environmental effects related to land use and planning. No mitigation would be required and impacts are less than significant.

**Level of Significance**

Impacts would be cumulatively less than significant.

**Brief Explanation of the Rationale for the Finding**

CEQA requires that all feasible and reasonable mitigation be applied to the project to avoid or substantially lessen significant impacts. However, cumulative impacts would be less than significant, and no mitigation measures are required.

**TRANSPORTATION AND TRAFFIC**

***A. Environmental Effects of the Project Found to Have No Impact on the Environment or Have a Less Than Significant Impact on the Environment.***

***B. Environmental Effects of the Project that Are Potentially Significant, but that Can Be Mitigated to Less Than Significant Levels.***

*The Project could conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities (Impact 4.2-1).*

The Hanford General Plan has policies related to traffic systems. The General Plan has established LOS E as the acceptable level on streets and intersections within the area bounded by State Route (SR) 198, 10th Avenue, 11th Avenue, and Florinda Avenue, and a peak hour LOS D on all other streets and intersections within the Planned Growth Boundary. The County of Kings has established LOS D as the acceptable level of traffic congestion on County roads. Since the study facilities for this Project lie outside of the SR 198, 10th Avenue, 11th Avenue, and Florinda Avenue boundary, the LOS D threshold was utilized to evaluate the potential significance of LOS impacts to the City of Hanford roadway facilities and the County of Kings facilities.

Signal warrant criteria was met for the 13<sup>th</sup> Avenue and Hanford Armona Road intersection; however, it is important to note that a signal warrant defines the minimum condition under which signalization of an intersection might be warranted. Meeting this threshold does not suggest traffic signals are required, but rather, that other traffic factors and conditions be considered to determine whether signals are truly justified. Pursuant to General Plan Policy T36, the Project proponent will be required to pay traffic development impact fees. The provision of an intersection signalization would be determined by the City of Hanford. Improvement costs for signalization are within the purview of traffic development impact fees as required in Policy T36, therefore eventual signalization of the intersection by the City would address the LOS deficiency caused by General Plan buildout (2044) and Project development (2044+Project).

For the 12<sup>th</sup> Avenue and Hanford Armona Road intersection, the TIA recommends improvements be made to the eastbound roadway to include changing the existing eastbound right turn lane (EBR) to an eastbound through and right turn lane (EBTR). The Project proponent would be required to pay their fair share cost for the needed improvement to ensure that the intersection by the year 2044, operates at an acceptable LOS. The inclusion of fair share cost payment is recommended as a Mitigation Measure and is included as MM 4.2-1. Implementation of MM 4.2-1 would allow the studied intersection to operate at an acceptable LOS under City LOS standards and reduce impacts to less than significant.

### ***Mitigation Measures***

MM 4.2-1: The Project proponent or developer shall be required to pay their fair share of costs for the needed improvements. This includes changing the 12<sup>th</sup> Avenue and Hanford Armona Road intersection eastbound right turn lane to an eastbound through lane and a right turn lane.

The fair share cost for the improvement is calculated at 18.94% and shall be collected by the City of Hanford at the appropriate time

### ***Level of Significance***

Impacts would be *less than significant with implementation of mitigation measures*.

### ***Finding***

The proposed Project would not have any potentially significant environmental effects related to LOS and the impacts that the Project may have on the surrounding roadway network. With implementation of Mitigation Measure MM 4.2-1 would reduce impacts to less than significant.

### ***Brief Explanation of the Rational for Finding***

CEQA requires that all feasible and reasonable mitigation be applied to the project to avoid or substantially lessen significant impacts related to General Plan policies related to LOS. Implementation of Mitigation Measure MM 4.2-1 as described above, would reduce impacts to a less than significant level.

### ***C. Effects of the Project that Cannot Be Mitigated to a Level Less Than Significant.***

*Conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b) (Impact 4.2-2)*

Land use developments meeting one or more of the screening criteria contained in the VMT Guidelines are presumed to create a less than significant transportation impact and no further VMT analysis is required. These criteria relate to project type, size, location, proximity to transit, and trip-making potential. The

project does not meet any of the screening criteria. Therefore, a detailed VMT analysis was prepared for the Project.

For projects that are not screened out, a quantitative analysis of VMT impacts must be prepared and compared against the adopted VMT thresholds of significance. According to the VMT Guidelines, residential developments that generate more than 8.99 daily VMT for residential VMT per capita would be considered to have a significant transportation impact.

Based on the VMT analysis, the Project would result in 9.61 VMT per capita and exceed the 8.99 VMT per capita threshold. As a result, it is recommended that the Project implement VMT mitigation measures for the residential component to reduce VMT per Capita. In order to reduce VMTs, a project must decrease the number of vehicle miles travels to and from the Project site. For land development projects, VMT mitigation focuses on measures that reduce the number and/or length of single-occupant vehicle trips generated by the project. These measures included increasing residential density and providing easy access to high-quality public transit within 0.5 miles of a high frequency transit station. However, there are no applicable and feasible mitigation measures available to reduce VMT below the adopted City and County thresholds. Therefore, the Project is expected to result in a significant transportation impact under CEQA

#### ***Mitigation Measures***

No mitigation measures

#### ***Level of Significance***

Impacts would be ***significant and unavoidable***

#### ***Finding***

There are no feasible and applicable mitigation measures that would be able to reduce VMT for the Project under City adopted thresholds. Therefore, impacts are considered significant and unavoidable.

#### ***Brief Explanation of the Rationale for the Finding***

CEQA requires that all feasible and reasonable mitigation be applied to the Project to reduce impacts. However, no mitigation measures were identified that are feasible and applicable to the Project that would reduce VMT under the City adopted thresholds.

#### ***D. Cumulative Environmental Effects of the Proposed Project that Would Have a Less Than Significant Impact on the Environment.***

There are no cumulative impacts related to transportation and traffic would result in a less than significant impact on the environment.

#### ***E. Cumulative Environmental Effects of the Proposed Project that Would Have a Significant Impact on the Environment.***

#### ***Significant Effect***

The Project would conflict or be inconsistent with CEQA Guidelines 15064.3, Subdivision (b). In combination with other approved or reasonably foreseeable projects, cumulative impacts to VMT would also be significant and unavoidable.

#### *Description of Significant Impact*

The Project's VMT would exceed the City's adopted VMT per capita thresholds.

#### *Finding*

There are no feasible and applicable mitigation measures that would be able to reduce VMT for the Project under City adopted thresholds. Therefore, impacts are considered significant and unavoidable. This impact is overridden by Project benefits as set forth in the statement of overriding considerations. There are no other feasible mitigation measures or changes to the Project that would reduce this impact to a less than significant level

#### *Brief Explanation of the Rationale for the Finding*

CEQA requires that all feasible and reasonable mitigation be applied to the Project to reduce impacts. However, no mitigation measures were identified that are feasible and applicable to the Project that would reduce VMT under the City adopted thresholds.

### **SECTION III. FINDINGS REGARDING CONSIDERATIONS, WHICH MAKE CERTAIN ALTERNATIVES, ANALYZED IN THE FINAL ENVIRONMENTAL IMPACT REPORT INFEASIBLE.**

The following findings and brief explanation of the rationale for the findings regarding Project alternatives identified in the EIR are set forth to comply with the requirements of Section 15091(s)(3) of the *CEQA Guidelines*.

The consideration of alternatives is an integral component of the CEQA process. The selection and evaluation of a reasonable range of alternatives provides the public and decision-makers with information on ways to avoid or lessen environmental impacts created by a Project. When selecting alternatives for evaluation, CEQA requires alternatives that meet most of the basic objectives of the Project, while avoiding or substantially lessening the Project's significant effects. Thus, the objective of the Project was considered by this board in evaluating the alternatives. This objective is to build and operate an economically viable and competitive development with a mix of commercial and residential uses in compliance with applicable laws and regulations, optimally utilizing the available land resource, and while minimizing any environmental impacts to the extent feasible. Thus, objectives for the Project were considered in evaluating the alternatives.

The Project has the following objectives:

- Provide a variety of housing opportunities with a range of styles, sizes, and values that will be designed to satisfy existing and future demand for quality housing in the area.
- Provide a sense of community and walkability within the development through the use of street patterns, parks/open space areas, landscaping, and other Project amenities.
- Create a successful and financially feasible Project by meeting the housing needs of the area.
- Provide a residential development that assists the City in meeting its General Plan and Housing Element requirements and objectives.

The alternatives considered in this EIR include two land use alternatives, a reduced construction alternative, and the No-Project Alternative. CEQA requires that alternatives that have been considered but rejected by the lead agency be addressed in the EIR. This portion of the EIR is also to determine which alternative is considered to be environmentally superior. This evaluation is to be based on which alternatives have the fewest unmitigated impacts and this comparison is to be made even for alternatives that may not completely fulfill all of the Project objectives. For the purpose of this evaluation, the following impacts were determined to be unmitigable after implementation of the mitigations recommended in the EIR.

### ***Significant Impacts Listed***

- **Transportation and Traffic** – The project and the project in conjunction with cumulative projects would conflict or be inconsistent with CEQA Guidelines 15064.3, Subdivision (b).

All other impacts can be mitigated to a relative level of insignificance through the implementation of the mitigation measures. Mitigation measures that reduced these impacts to a level below the Thresholds of Significance are detailed in the EIR.

### **No Project Alternative**

Under the No Project Alternative, the Project area would remain unchanged and there would be no residential units or parks constructed. Under the No Project Alternative, the Project area would remain unchanged and there would be no residential units or parks constructed. The No Project Alternative would keep the site as agriculture and remain under the jurisdiction of Kings County. As no change would occur, the Project site would continue to be consistent with the Kings County General Plan land use designation and zoning of Limited Agriculture, 10 acres (AL10). The City is also required to meet the State Regional Housing Needs Allocation (RHNA) for new housing in the City under the Housing Element of the City General Plan. The No Project Alternative would not fulfill the objectives of the Project or assist the City in meeting RHNA. With regard to transportation impacts, the No Project Alternative would result in no new trips generated

The No Project Alternative would reduce the significant and unavoidable impact relating to VMT; however, the City is required to meet the State Regional Housing Needs Allocation (RHNA) for new housing in the City. The No Project Alternative would not fulfill the objectives of the Project or assist the City in meeting RHNA.

### **Reduced Project Alternative**

This alternative would decrease the number of single-family residential houses from 326 to 242. As described in this draft EIR, the proposal to approve the tentative tract map, annex the site into the City, and rezoning the site to R-L-5 would remain the same. A similar outcome to the proposed Project would occur with regard to County and City General Plan consistency. The annexation would meet County and LAFCo objectives in addition to providing planned City expansion within their SOI. This alternative will meet all Project objectives but would have a reduced positive effect of assisting the City in meeting regional housing needs. Under this Alternative, overall VMT for the Project would decrease; however, per capita VMT impacts would remain *significant and unavoidable*.

With regard to City LOS thresholds, overall trip generation would be reduced, resulting in lessened impacts on studied intersections. However, this reduction is still likely to exceed LOS thresholds cumulatively, and require mitigation as indicated in this draft EIR to improve the impacted intersection of 12<sup>th</sup> Avenue and Hanford Armona Road. Impacts regarding LOS would continue to be *less than significant with mitigation incorporated*.



## **Multi-Family Alternative**

This alternative would replace the proposed single-family residential with multi-family apartments at a density of at least 14.5 dwelling units per gross acre (1,088 units). The Project site is currently designated by the General Plan for low-density residential and rezoned R-L-5. The proposed Project request would be modified to include a General Plan Amendment and a Zone Change to Medium Density Residential (R-M) to allow multi-family apartments. With regard to the addition of a General Plan Amendment, consistency findings with General Plan goals and policies would be necessary to determine if the proposed Medium Density Residential land use would comply.

Under this Alternative, the overall density increase would result in higher trips generated. This would, in turn, cause impacts to LOS and VMT. For LOS, a rise in vehicle trips generated due to an increased number of residents originating from the Project site would result in higher utilization of intersections in the vicinity of the site. Based on this assumption, the higher utilization could negatively impact LOS for the studied intersections and would potentially require additional mitigation/improvements to intersections to meet LOS standards.

With regard to the adopted screening criteria and VMT thresholds, Alternative C does not meet the screening criteria and would likely generate more than 1,000 average daily trips, is not located within 0.5 miles of a transit priority area and is not located within an area where existing VMT per capita is low. An increase in density over the national average (9.1 dwelling units per acre) can result in a VMT reduction. Assuming no change in the amount of developable land, the project would need at least 455 dwelling units to reach the national average and be credited for any reduction in project VMT. Moreover, the project would require a total of 590 dwelling units to mitigate the impact of project VMT to a less than significant level. Therefore, VMT under this Alternative would result in a less than significant impact.

## **Different Site Alternative**

This alternative would relocate the Project to a different site in order to be located nearer to corridor mixed use where a mix of commercial and office uses would be available in addition to be located closer to major transit corridors. This alternative would place the Project on the east side of the City, bounded by Lacey Boulevard to the south, 9 1/4 Avenue to the west, SR 43 to the west, and Grangeville Boulevard to the north. This alternative will meet all Project objectives and would assist the City in meeting its regional housing needs.

With regard to LOS standards, the alternative site would require an analysis of intersections in the vicinity of the site and the comparisons of future conditions at the chosen intersections. It can be determined that under Alternative D, impacts to LOS at intersections could occur similar to the proposed Project, overall VMT for the Project could decrease slightly; however, per capita, VMT would remain the same as the proposed Project. Impacts would continue to be significant and unavoidable. In addition, the applicant does not currently own either of these properties and it is not known if the current owners are willing to sell these properties.

## ***Environmentally Superior Alternative***

An EIR is required to identify the environmentally superior alternative from among the range of reasonable alternatives that are evaluated. Section 15126.6(e)(2) of the CEQA Guidelines requires that an environmentally superior alternative be designated, and states, “[I]f the environmentally superior alternative is the No Project Alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives.” In Chapter 6-Alternatives, Table 6-1 displays the environmental impacts of alternatives to the Project in terms of the impact areas that were analyzed in this Draft EIR in Chapter 4,

Environmental Impact Analysis. As shown, the Multi-Family Alternative would be considered the environmentally superior alternative.

Selection of an environmentally superior alternative is based on an evaluation of the extent to which the alternatives reduce or eliminate the significant impacts associated with the Project on a comparison of the remaining environmental impacts of each alternative. In conducting this comparative evaluation, it can be difficult to make a determination of relative significance because some categories are relatively more or less important and cannot be simply summed. In some cases, these categories do not create a picture of the nuances of the alternatives.

***Finding:*** The Planning Commission finds that the No Project alternative is the environmentally superior alternative, but that the No Project Alternative would be less desirable than the Project because it would not achieve any of the Project objectives.

***Facts Supporting the Finding:*** The EIR contains facts and analyses supporting the Finding, some of which are set forth here. The No Project Alternative would not help the City to meet the required RHNA for new housing in the City. The Alternative would not fulfill the objectives of the Project. Demand for residential development would be met by other projects that may have greater impacts than the proposed Project. Moreover, employment opportunities would not be generated for construction workers in Handford or Kings County. In short, the No Project Alternative does not meet overall Project objectives.

#### ***Environmentally Superior” Build Alternative”***

Where, as here, the environmentally superior alternative is the” No Project Alternative”, the State CEQA Guidelines require the identification of an environmentally superior alternative from among the remaining alternatives. (CEQA Guidelines, Section 15126.6(e)(2).)

***Finding:*** The Planning Commission evaluated the Project and Alternatives A, B, C and D to the Project, and finds that Alternative D is the environmentally superior alternative. Alternative C – Multi-Family would reduce significant and unavoidable environmental impacts relating to VMT while fulfilling most of the objectives of the proposed Project. However, while Alternative C would incrementally reduce many environmental impacts of the Project, it would not reduce significant and unavoidable impacts of the Project to below a level of significance. Moreover, it may not be economically feasible to implement, thereby impeding the ability to meet the Project objectives set forth by the applicant.

## **Exhibit B**

### Statement of Overriding Considerations

## STATEMENT OF OVERRIDING CONSIDERATIONS

### State CEQA Guidelines Section 15093

for

### Silicon Valley Ranch Residential Development (Tract No. 943) Project

#### Final Environmental Impact Report (SCH# 2024060956)

#### Lead Agency: City of Hanford

The California Environmental Quality Act (CEQA) allows a public agency to balance the benefits of a proposed Project against its significant unavoidable adverse impacts in determining whether to approve the Project. Section 15093 of the CEQA Guidelines states:

CEQA requires the decision making agency to balance, as applicable, the economic, legal, social, technological, or other benefits of a proposed Project against its unavoidable environmental risks when determining whether to approve the Project. If the specific economic, legal, social, technological, or other benefits of a proposed Project outweigh the unavoidable adverse environmental effects, the adverse environmental effects may be considered “acceptable.”

As discussed in more detail in the final EIR and CEQA Findings of Fact (Section 15091), the Project will result in environmental impacts related to Vehicle Miles Traveled (VMT), which cannot be feasibly mitigated by the implementation of mitigation measures, will remain significant and unavoidable adverse impacts. These significant unavoidable impacts are summarized below and constitute those impacts for which this Statement of Overriding Considerations is made. These impacts are summarized below and constitute those impacts for which this statement of overriding considerations is made.

#### Significant and Unavoidable Impacts

1. Transportation and Traffic The Project’s Vehicle Miles Travelled (VMT) and Cumulative VMT would exceed the City’s VMT thresholds and is considered significant and unavoidable.

CEQA requires that all feasible and reasonable mitigation be applied to the Project to reduce impacts. However, no mitigation measures were identified that are feasible and applicable to the Project that would reduce VMT under the City adopted thresholds. The Project would conflict or be inconsistent with CEQA Guidelines 15064.3, Subdivision (b). In addition, in combination with other approved or reasonably foreseeable projects, cumulative impacts to VMT would also be significant and unavoidable.

#### Findings

The City Planning Commission (Commission) finds and determines in recommending approval of the development of the Project that it has considered the identified means of lessening or avoiding the Project’s significant effects. The Commission further finds and determines that the specific economic, legal, social, technological, or other benefits, including region-wide or statewide environmental benefits of the project, as discussed below, outweigh its unavoidable adverse environmental effects. Therefore, this Commission

finds and determines in recommending approval that such benefits override, outweigh, and make “acceptable” any such remaining environmental impacts of the project (CEQA Guidelines Section 15092 (a) and (b)).

The following benefits and considerations outweigh such significant and unavoidable adverse environmental impacts. All of these benefits and considerations are based on the facts set forth in the findings, the final focused EIR, and the record of proceedings for the project. Each of these benefits and considerations constitutes a separate and independent basis that justifies approval of the project, so that if a court were to set aside the determination that any particular benefit or consideration justifies project approval, the Commission would stand by its determination that the remaining benefits or considerations are sufficient to justify and substantiate project approval.

### **Facts in Support of Statement of Overriding Considerations**

The objective of the Project is to build and operate an economically viable and competitive development with residential uses in compliance with applicable laws and regulations, optimally utilizing the available land resource, and while minimizing any environmental impacts to the extent feasible.

Each benefit set forth below constitutes an overriding consideration warranting approval of the project, independent of the other benefits, and the City Council determines that the adverse environmental impacts of the project are “acceptable” if any of these benefits would be realized. The project would provide benefits as follows:

- 1. Accommodates the Need for Regional Housing.** At buildout, the Project proposes to construct approximately 326 dwelling units. As discussed in Section 3.4.14 – Population and Housing, the Project would help the City achieve its need to accommodate residential growth. The housing goal for the City of Hanford, according to its Regional Housing Needs Allocation (RHNA), includes the construction of 15,695 additional dwelling units by 2035 to accommodate estimated population growth. The Project would accommodate the need established by the RHNA, the City of Hanford General Plan Housing Element, and the projected population growth of the City of Hanford and surrounding area.
- 2. Provides Orderly Expansion and Consistent with General Plan and Zoning Ordinance.** The proposed Project provides new development in an orderly manner and is coordinated with the General Plan provision of infrastructure, public infrastructure, and public improvements. The proposed Project allows for the incremental expansion of infrastructure and public services and provides a high-quality environment for living. In addition, the proposed Project provides a safe and efficient street system that links all Project areas and allows for the movement of both vehicle and non-vehicle traffic. The Project will be required to use and expand upon the existing local road system and contribute to certain regional transportation improvements which will help to develop the transportation system in the area.

Further, the Project would fill in an undeveloped island of county land surrounded by development and will connect to the City’s existing infrastructure of roads, water, sewage and drainage. It will also create a new park in the area and connect the dead-end roads along the eastern boundary so that residents have another access to Hanford Armona Road.

- 3. Provides More Efficient Use of Land and Existing Resources.** The property was previously farmed with animal feed and fodder such as wheat, milo and corn. Permanent crops such as almonds, pistachios, vineyard and olives were no longer viable due to reduced water availability. The Project will convert the site from agricultural to an urban use. Water for continued crop

cultivation is no longer available to the property when the existing infrastructure was cut off by development of a roadway. Also, with the new Sustainable Groundwater Management Act (SGMA) laws the well water would have been inadequate and too expensive to continue farming the entire property.

This is not prime farmland being taken out of production; the proposed Project is considered a higher and better use of the property. Its proximity to State Route 198 and other existing roadways makes it a logical and efficient location for development.

4. **Will Provide Additional Economic Benefits.** Farming the site required less than two workers for the entire year. The economic benefit and revenue were marginal to the City and County. The Project will result in creating affordable housing at lower market rates, in addition to providing good paying construction jobs. Landscaping and yard maintenance costs alone will be larger than the agricultural income currently generated from the property. The construction should also increase the tax base and create more revenue for the City. Construction of 324 new homes selling at an average sales price of \$325,000, would generate an approximate \$105,300,000 value that would be taxed at 1.1 percent. This would generate over \$1,150,000 of property tax income to the City.

### **Conclusion**

As the CEQA Lead Agency for the proposed action, the City has reviewed the project description for the Project and the FEIR and fully understands the Project proposed by the applicant. Based on the entire record before the Commission, and having considered the unavoidable adverse impacts of the Project, the Commission hereby determines that all feasible mitigation has been adopted to reduce the potentially significant impacts identified in the FEIR, and that no additional feasible mitigation is available to further reduce significant impacts.

The Commission finds that economic, social, technological, and other considerations of the Project outweigh the unavoidable adverse impacts described above. Further the Commission finds that each of the separate benefits of the Project is hereby determined to be, in itself and independent of the other Project benefits, a basis for overriding all unavoidable environmental impacts identified in the FEIR and in the CEQA Findings. In making this finding, the Commission has balanced the benefits of the Project against its unavoidable environmental impacts and has indicated its willingness to accept those risks

## RESOLUTION NO. 2025-02

**A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF HANFORD RECOMMENDING APPROVAL TO THE CITY COUNCIL OF PREZONE NO. 0005-23 PREZONING REAL PROPERTY AS R-L-5 LOW-DENSITY RESIDENTIAL, IN ACCORDANCE WITH THE GENERAL PLAN DESIGNATION FOR THE AREA, LOW-DENSITY RESIDENTIAL. THE PROJECT IS LOCATED SOUTH OF HANFORD-ARMONA ROAD, BETWEEN 12<sup>TH</sup> AND 13<sup>TH</sup> AVENUES (APN 011-040-008, -010, AND -027).**

At a regular meeting of the City of Hanford Planning Commission duly called and held on January 14, 2025, on motion of Commissioner \_\_\_\_\_, seconded by Commissioner \_\_\_\_\_, and duly carried, the following resolution was adopted:

**WHEREAS**, Marc Frelie, Silicon Valley Ranch, LLC, initiated the prezone from County zoning "AL-10" Limited Agriculture to City zoning R-L-5 Low-Density Residential on approximately 88.89 acres generally located south of Hanford-Armona Road, east of 13<sup>th</sup> Avenue, as shown in **Exhibit A**; and

**WHEREAS**, the City of Hanford Planning Commission considered the prezone, in accordance with Section 17.86.030 of the Hanford Municipal Code, at its regularly scheduled meeting on January 14, 2025; and

**WHEREAS**, the City of Hanford Planning Commission considered the evidence presented in the staff report and testimony presented during the public hearing; and,

**WHEREAS**, the Focused Final EIR and all notices related thereto were prepared in compliance with the California Environmental Quality Act (CEQA) and the City of Hanford Municipal Code and Policies;

**NOW, THEREFORE, BE IT RESOLVED**, that the City of Hanford Planning Commission, in accordance with Section 17.86.030 of the Hanford Municipal code, recommends approval to the City Council of Prezone No. 0005-23, based upon the following findings and on the evidence presented:

1. That the amendment is internally consistent with the goals, objectives, and policies of the General Plan and the Municipal Code.

Analysis: That Prezone No. 0005-23 is internally consistent with the goals, objectives, and policies of the General Plan, specifically consistent with Land Use Policies L15 and L17. The development proposed in the annexation area, under Vesting Tentative Tract 943, conforms with all regulations pertaining to the R-L-5 Low-Density Residential zone district.

2. That the amendment would not be detrimental to the public health, safety, or welfare of the community.

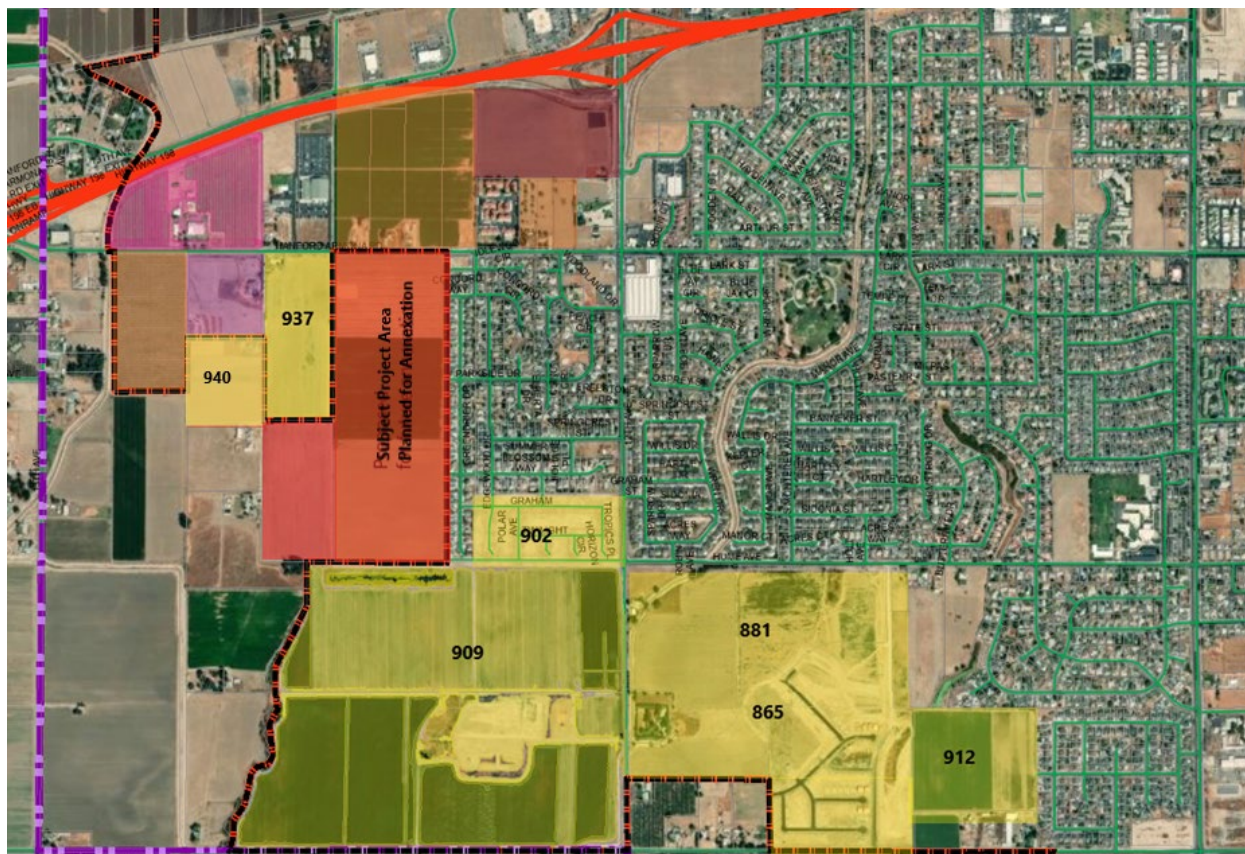
ANALYSIS: That this application has been reviewed by County departments, utility companies, City Fire Department, City Building Department, and other involved departments. Any mitigation required for public health and safety were applied to the proposal and required in the mitigation monitoring and reporting program.

3. That the amendment would maintain the appropriate balance of land uses within the City.

Analysis: That jobs-housing balance is achieved by increasing opportunities for people to work and live in close proximity. The ratio is expressed as the number of jobs divided by the number of housing units. The jobs-housing balance is a general tool for analyzing where people work, where they live, and how effectively they can travel between the two. In the planning area, the existing jobs-housing balance ratio in 2013-2014 was 1.17. It is estimated that the implementation of the General Plan would increase the jobs-housing balance by 0.45 to 1.62, which would make the planning area a jobs-rich area. The prezone is considered an implementation of the General Plan, which designates the project site as Low-Density Residential with a “floating” Future Educational Facility designation, not required for this location.

4. That the anticipated land uses on the subject site would be compatible with existing and future surrounding uses.

Analysis: That the anticipated land uses on the subject site are low-density residential, as proposed under Tentative Tract 943, which is compatible with planned single-family residential developments in the surrounding area.



**PASSED AND ADOPTED** at a regular meeting of the City of Hanford Planning Commission by the following vote:

|          |               |
|----------|---------------|
| AYES:    | Commissioners |
| NOES:    | Commissioners |
| ABSTAIN: | Commissioners |
| ABSENT:  | Commissioners |

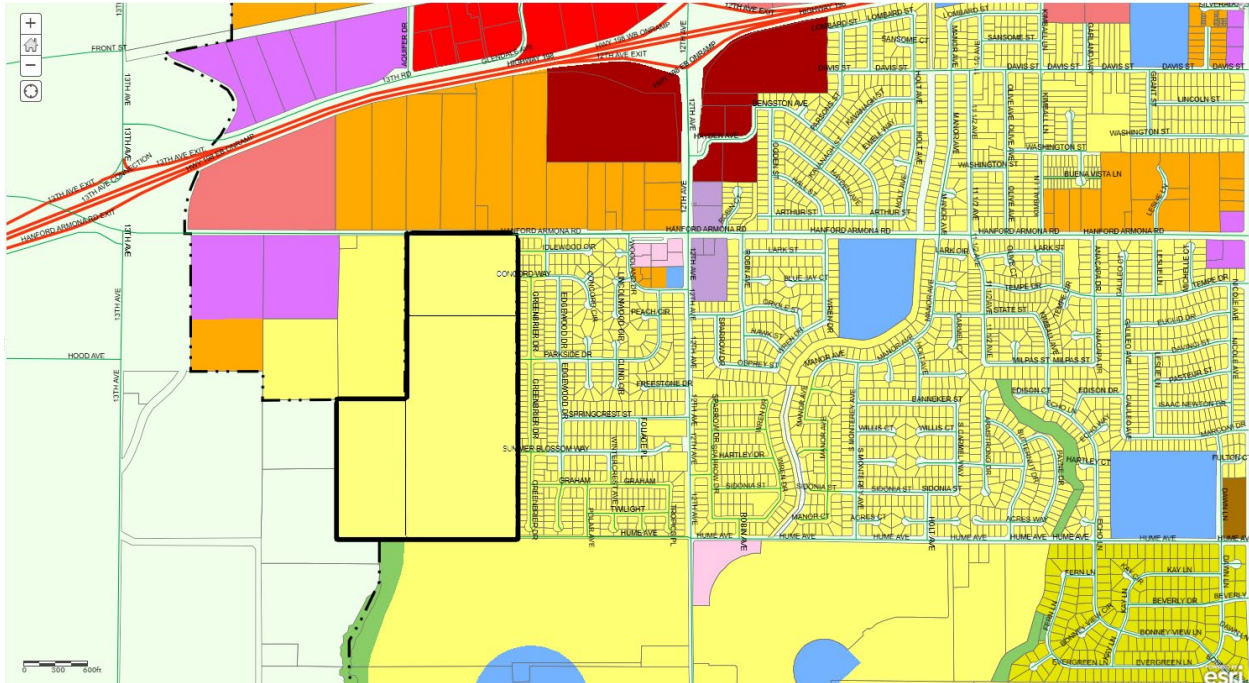


STATE OF CALIFORNIA)  
COUNTY OF KINGS     ) ss  
CITY OF HANFORD     )

I, **Jason Waters**, Secretary of the Planning Commission of the City of Hanford, do hereby certify the foregoing resolution was duly passed and adopted by the Planning Commission of the City of Hanford at a regular meeting thereof held on the 14<sup>th</sup> day of January 2025.

Jason Waters

**Prezone No. 0005-23**  
**R-L-5 Low-Density Residential (outlined in bold)**



## RESOLUTION 2025-03

**A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF HANFORD RECOMMENDING APPROVAL TO THE CITY COUNCIL OF VESTING TENTATIVE TRACT 943, A REQUEST BY SILICON VALLEY RANCH, LLC, TO SUBDIVIDE 75.02 ACRES INTO 326 SINGLE-FAMILY RESIDENTIAL LOTS, A 3.58-ACRE PARK, AND THREE-ACRE STORM BASIN IN AN AREA PREZONED R-L-5 LOW-DENSITY RESIDENTIAL. THE PROJECT IS LOCATED SOUTH OF HANFORD ARMONA ROAD, BETWEEN 12<sup>TH</sup> AND 13<sup>TH</sup> AVENUES (APN 011-040-008, -010, AND -027).**

At a regular meeting of the Planning Commission of the City of Hanford duly called and held on January 14, 2025, by motion of Commissioner , and seconded by Commissioner , and duly carried, the following resolution was adopted:

**WHEREAS**, Tentative Subdivision Map No. 943, **Exhibit A**, a request, by Marc Frelie, to subdivide 75.02 acres proposed to be rezoned R-L-5 Low-Density Residential into 326 single-family residential lots, a 3.58-acre park, and three-acre storm basin, has been reviewed by the Planning Commission of the City of Hanford, in accordance with Title 16 of the Hanford Municipal Code; and

**WHEREAS**, The project is located south of Hanford Armona Road, between 12th and 13th Avenues (APN 011-040-008, -010, and -027); and

**WHEREAS**, all notices related to conducting public hearings were prepared and published in compliance with State Government Code; and

**WHEREAS**, all affected public utility companies, various governmental department agencies, and the Planning Commission staff have given careful consideration to this tentative subdivision map and have made recommendations thereon; and

**WHEREAS**, the Final Focused EIR all notices related thereto were prepared in compliance with the California Environmental Quality Act (CEQA) and the City of Hanford Municipal Code and Policies; and

**NOW, THEREFORE, BE IT RESOLVED**, that the Planning Commission has made the following findings pursuant to Section 16.04.010 of the Hanford Subdivision Ordinance, Section 66474 of the Subdivision Map Act and Hanford's Zoning Ordinance:

1. Consistency Finding:

ANALYSIS: That a consistency finding can be made, because the proposed subdivision map is consistent with the State Subdivision Map Act, General Plan, Zoning Ordinance, and Subdivision Ordinance. The subdivision is consistent with the General Plan Designation for the property, Low-Density Residential. All requirements of the R-L-5 Low-Density Residential zone district are met for lot size, frontage, width, and depth. Compliance with the regulations set forth in the Hanford Municipal Code for the R-L-5 Low-Density Residential zone district will be a condition of approval for the subdivision.

2. Design Finding:

ANALYSIS: That the design and improvement of the subdivision is consistent with the State Subdivision Map Act, General Plan, Zoning Ordinance, and Subdivision Ordinance. The subdivision is consistent with the General Plan Designation for the property, Low-Density Residential. All requirements of the R-L-5 Low-Density Residential zone district are met for lot size, frontage, width, and depth. Compliance with the regulations set forth in the Hanford Municipal Code for the R-L-5 Low-Density Residential zone district will be a condition of approval for the subdivision.

3. Type of Development Finding:

ANALYSIS: That the site is physically suitable for the single-family residential development proposed under Tentative Tract 943. The lots proposed meet the minimum lot size of the R-L-5 Low-Density Residential Zone District. All parcels have adequate street frontage on a public street and meet the minimum depth and width required for the district.

4. Density Finding:

ANALYSIS: That a density finding can be made, because the site is physically suitable for the proposed density of development. The General Plan prescribes a density range between two and 10 units per acre, with an expected average of four units per gross acre. The project has a density of 4.35 dwelling units per gross acre.

5. Environmental Finding:

ANALYSIS: That a focused environmental impact report was prepared for the project. On the basis of the Focused EIR, the City of Hanford, as the Lead Agency, has determined the project described above would have a significant effect on the environment based relating to the project's transportation/traffic impacts and recommended a Statement of Overriding Considerations be adopted for the project's significant impact.

6. Public Health Finding:

ANALYSIS: That the design of the subdivision and type of improvements are not likely to cause serious health problems. The City of Hanford Building Division is responsible for ensuring that future construction of the site follows adopted building codes, thus reducing exposures to accidents to the general public. Consultation was sent for Tentative Tract 943 to interested agencies, including the County Health Department, Public Works Department, Fire Department, and Building Division. Any improvements or mitigations required for public health and safety were applied to the proposal and required in the conditions of approval and the mitigation monitoring and reporting program.

7. Improvements and Access Findings:

ANALYSIS: That the design of the subdivision and type of improvements will not conflict with easements acquired by the public at large for access through or use of the property within the proposed subdivision. All easements will be designated on the final subdivision map, as required by the utility companies and where needed for providing service to streetlights and landscape improvements, as designated by the City Public Utilities and Engineering Division. Additional easements are required, as follows:

- a) A 20-foot easement established south of the centerline of Hume Avenue is required to be dedicated to the city for the purposes of street right-of-way.
- b) An easement for storm drainage purposes is required to be dedicated to the City, where necessary, to facilitate installation of storm drainage facilities connecting the portion of the development located on the west side of Aquifer Drive to the proposed storm drainage basin located on the east side of Aquifer Drive.
- c) All easements for irrigation ditches and/or irrigation pipelines will be legally abandoned or relocated to the satisfaction of the City Engineer prior to acceptance of the subdivision improvements.
- d) An easement for sanitary sewer along the south side of Hume Avenue for gravity sewer pipeline, sewer lift station and force main is required to be dedicated to the city. This dedication requirement is contingent on whether Tract 943 develops before Live Oak West Tract 909.
- e) All proposed landscape/public utility easements, as shown on the tentative map, are required to be dedicated to the City and be included on the subdivision final map.

**THEREFORE, BE IT RESOLVED** that the Planning Commission of the City of Hanford hereby recommends approval of Tentative Tract 943 to the City Council, subject to the conditions of approval, attached as **Exhibit B**, and the following:

1. That this tentative subdivision map becomes null and void after 24 months has elapsed from the date of approval, if the above conditions have not been satisfied or bonded for, and a final map recorded. A time extension may be granted by the Commission upon written request by the applicant. The time extension, if approved, will be subject to the improvement standards and fees in effect at the time the extension for the tentative subdivision map is granted.

**PASSED AND ADOPTED** at a regular meeting of the Planning Commission of the City of Hanford by the following vote:

AYES: Commissioners  
NOES: Commissioners  
ABSTAIN: Commissioners  
ABSENT: Commissioners

STATE OF CALIFORNIA)  
COUNTY OF KINGS )ss  
CITY OF HANFORD )

I, **Jason Waters**, Secretary of the Planning Commission of the City of Hanford, do hereby certify the foregoing Resolution was duly passed and adopted by the Planning Commission of the City of Hanford at a regular meeting thereof held on the **14<sup>th</sup>** day of **January 2025**.

---

Jason Waters, Deputy City Manager  
Secretary of the Planning Commission

Tentative Tract 943

**Exhibit A**  
Vesting Tentative Tract 943



VESTING TENTATIVE  
SUBDIVISION MAP TRACT #943  
SILICON VALLEY RANCH

A PORTION OF THE WEST HALF OF THE NORTHEAST QUARTER & A PORTION OF THE EAST HALF OF THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 3, TOWNSHIP 19 SOUTH, RANGE 21 EAST, MOUNT DIABLO BASE & MERIDIAN, IN THE CITY OF HANFORD, COUNTY OF KINGS, STATE OF CALIFORNIA.

APPLICANT/OWNER:  
SILICON VALLEY RANCH, LLC  
PHIL R. BOYCE  
20900 BOYCE LANE  
SARATOGA, CA 95070  
408-867-3737

ZUMWALT  
HANSEN &  
A Company  
609 N. IRWIN STREET  
HANFORD, CA 93230  
TEL: (559) 582-8898  
WWW.ZKINC.COM

LEGAL DESCRIPTION

PARCEL 1: 011-040-008 AND 011-040-010  
ALL THAT PORTION OF THE WEST HALF OF THE NORTHEAST QUARTER OF SECTION 3, TOWNSHIP 19 SOUTH, RANGE 21 EAST, MOUNT DIABLO BASE AND MERIDIAN, ACCORDING TO THE OFFICIAL PLAT THEREOF, DESCRIBED AS FOLLOWS:  
BEGINNING AT THE NORTHWEST CORNER OF SAID NORTHEAST QUARTER; THENCE SOUTH ALONG THE WEST LINE THEREOF A DISTANCE OF 43.26 CHAINS, MORE OR LESS, TO THE SOUTHWEST CORNER OF SAID NORTHEAST QUARTER; THENCE EAST ALONG THE SOUTH LINE OF SAID QUARTER SECTION; 15.64 CHAINS TO THE CENTER OF A WATER DITCH; THENCE NORTHERLY ALONG THE CENTER LINE OF SAID WATER DITCH 43.26 CHAINS TO A POINT IN THE NORTH LINE OF SAID NORTHEAST QUARTER; THENCE WEST ALONG SAID NORTH LINE A DISTANCE OF 16.25 CHAINS, MORE OR LESS, TO THE POINT OF BEGINNING.  
PARCEL 2: 011-040-027  
THAT PORTION OF THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 3, TOWNSHIP 19 SOUTH, RANGE 21 EAST, MOUNT DIABLO BASE AND MERIDIAN, IN THE COUNTY OF KINGS, STATE OF CALIFORNIA, MORE PARTICULARLY DESCRIBED AS PARCEL 2 OF PARCEL MAP RECORDED IN BOOK 5, PAGE 72, OF PARCEL MAP RECORDED IN BOOK 5, PAGE 72 OF PARCEL MAPS, KINGS COUNTY RECORDS.

LEGEND

|      |                                   |      |                          |
|------|-----------------------------------|------|--------------------------|
| AC   | ASPHALT PAVING                    | EM   | ELECTRIC METER           |
| BW   | BACK OF WALK                      | ES   | EXISTING STREET LIGHT    |
| CRN  | ASPHALT CROWN                     | EP   | FIRE HYDRANT             |
| EP   | EDGE OF PAVEMENT                  | FL   | GATE POST                |
| FL   | FLOW LINE                         | GDP  | GUY POLE                 |
| GDP  | GUARD POST                        | GV   | IRRIGATION AG WELL       |
| GV   | GAS VALVE                         | INV  | IRRIGATION STANDPIPE     |
| OG   | ORIGINAL GROUND                   | OG   | IRRIGATION VALVE         |
| SSCO | SANITARY SEWER CLEANOUT           | SSCO | TOPO                     |
| SW   | SIDEWALK                          | TP   | SANITARY SEWER CLEANOUT  |
| TC   | TOP OF CURB                       | TP   | SANITARY SEWER MANHOLE   |
| TP   | TELEPHONE POLE                    | WBO  | SIGN                     |
| WBO  | WATER BLOW-OFF                    |      | S.D. CATCH BASIN MANHOLE |
|      | EXISTING ELECTRIC LINE (OVERHEAD) |      | STORM DRAIN MANHOLE      |
|      | EXISTING GAS LINE                 |      | TELEPHONE CHRISTY BOX    |
|      | EXISTING WOOD FENCE               |      | TELEPHONE PEDESTAL       |
|      | EXISTING CHAINLINK FENCE          |      | TRANSFORMER POLE         |
|      | EXISTING POST & WIRE FENCE        |      | UTILITY POLE             |
|      | EXISTING AC SURFACING             |      | WATER METER              |
|      | EXISTING CONCRETE SURFACE         |      | WATER VALVE              |
|      | NO REAR OR SIDE ACCESS            |      |                          |
|      | BENCHMARK                         |      |                          |
|      | DOWN GUY                          |      |                          |

LOT INFORMATION

|                 |     |
|-----------------|-----|
| PHASE I LOTS:   | 135 |
| PHASE II LOTS:  | 107 |
| PHASE III LOTS: | 84  |
| TOTAL LOTS:     | 326 |

AREA

|                  |          |
|------------------|----------|
| PHASE I GROSS:   | 31.84±AC |
| PHASE II GROSS:  | 24.85±AC |
| PHASE III GROSS: | 18.33±AC |
| TOTAL SITE:      | 75.02±AC |

|                             |          |
|-----------------------------|----------|
| INTERIOR STREET DEDICATION: | 17.48±AC |
| PHASE I:                    | 8.85±AC  |
| PHASE II:                   | 4.58±AC  |
| PHASE III:                  | 4.05±AC  |
| EXTERIOR STREET DEDICATION: | 4.91±AC  |
| PHASE I:                    | 1.19±AC  |
| PHASE II:                   | 2.46±AC  |
| PHASE III:                  | 1.26±AC  |
| TOTAL STREET DEDICATION:    | 22.39±AC |

|                         |        |
|-------------------------|--------|
| STORM BASIN DEDICATION: | 3.00AC |
| PARK:                   | 3.58AC |

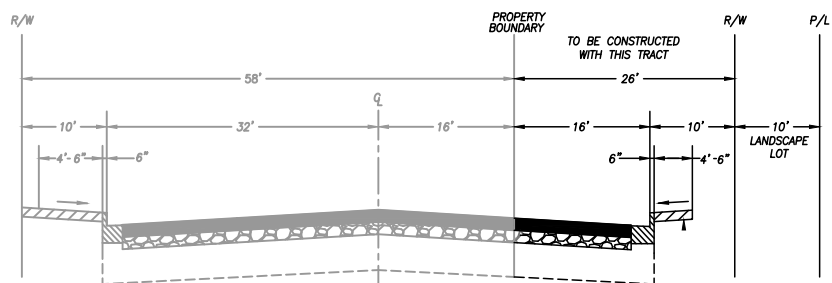
|                             |         |
|-----------------------------|---------|
| LANDSCAPE DEDICATION:       |         |
| PHASE I: LOTS A-C           | 0.28±AC |
| PHASE II: LOTS D-E          | 0.38±AC |
| PHASE III: LOTS F-I         | 0.43±AC |
| TOTAL LANDSCAPE DEDICATION: | 1.09±AC |

NOTES

- DATE OF PREPARATION: MARCH 21, 2024
- GENERAL PLAN DESIGNATION: LOW DENSITY RESIDENTIAL
- CITY ZONING: R-L-5
- ALL DISTANCES SHOWN ARE IN FEET & DECIMALS THEREOF AND ARE APPROXIMATE
- OFFSITE STREETS = 4.91 AC; ONSITE STREETS = 17.48 AC; LOTS = 46.06 AC; PARK & BASIN = 6.58 AC
- EXISTING LAND USE: AG
- PROPOSED LAND USE: SINGLE FAMILY RESIDENTIAL (100% OF SITE)
- NATURAL GAS BY: THE GAS COMPANY
- TELEPHONE BY: AT&T
- POWER BY: SOUTHERN CALIFORNIA EDISON CO
- CABLE T.V. BY: COMCAST
- DOMESTIC WATER BY: CITY OF HANFORD
- SEWAGE DISPOSAL BY: CITY OF HANFORD
- REFUSE COLLECTION BY: CITY OF HANFORD
- DRAINAGE: SITE BASIN
- STORM DRAIN BASIN (PHASE I)

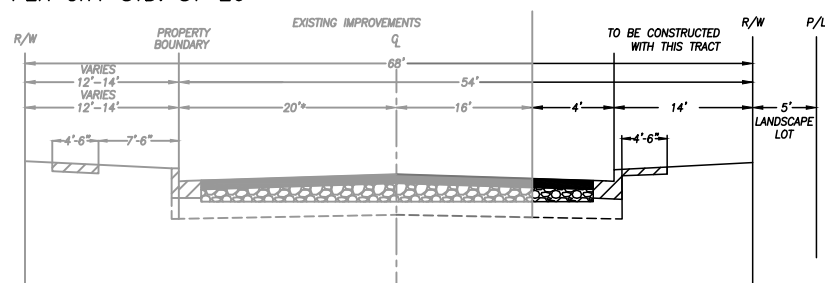
SECTION A-A  
AQUIFER DRIVE

NOT TO SCALE  
PER CITY STD. ST-23 (REVISED)



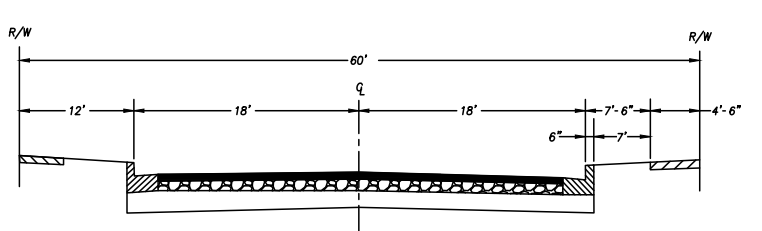
SECTION B-B  
W SPRING CREST DRIVE

NOT TO SCALE  
PER CITY STD. ST-26



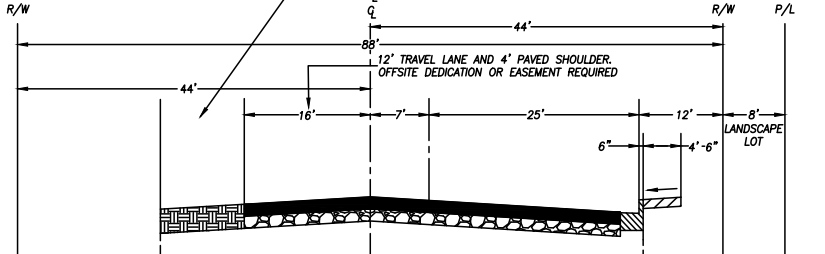
SECTION C-C  
INTERIOR STREETS

NOT TO SCALE  
PER CITY STD. ST-32



SECTION D-D  
HUME AVENUE

NOT TO SCALE  
PER CITY STD. ST-23

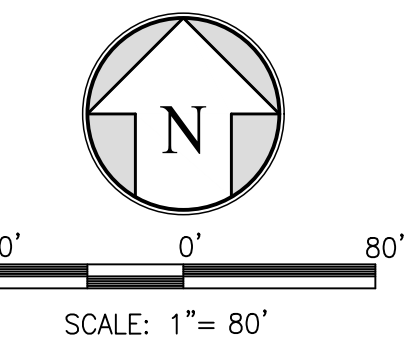
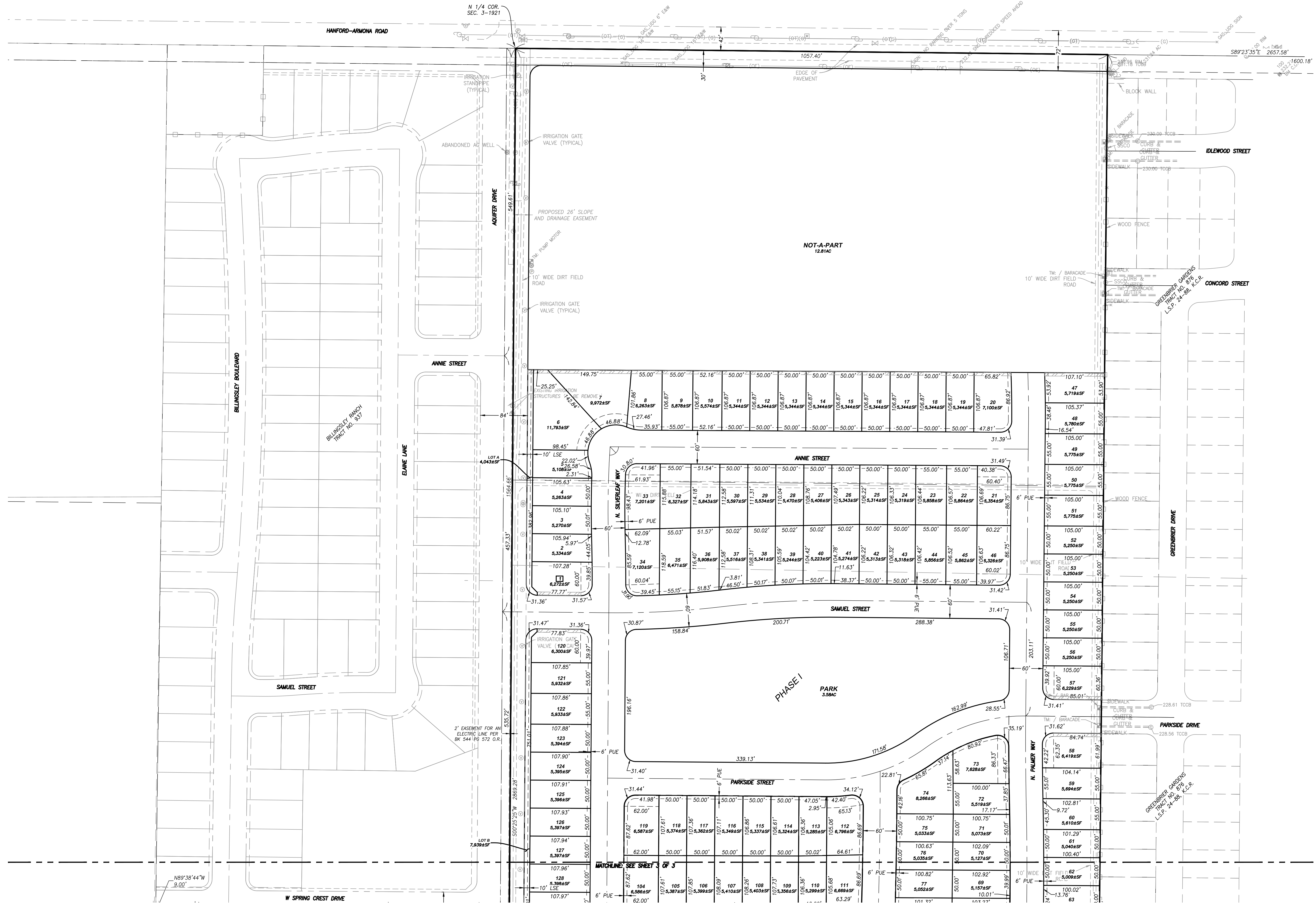


LOCATION MAP

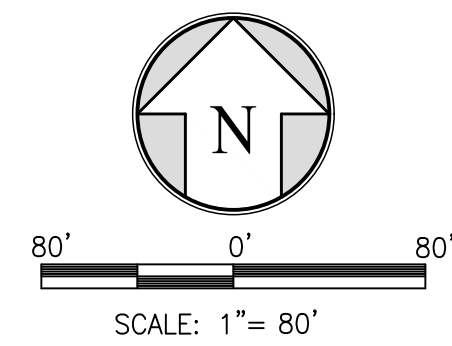
NOT TO SCALE











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**Exhibit B**  
Conditions of Approval

**PLANNING DIVISION**  
**SITE PLAN REVIEW COMMENTS**

**TENTATIVE TRACT NO. 943**

**CONTACT:** Gabrielle Myers, Senior Planner: (559) 585-2578

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**General Plan Designation:** Low-Density Residential

**Zoning:** R-L-5 Low-Density Residential

**Other Special Districts:** N/A

**Entitlements Required:**

1. Annexation – the property is currently in the Kings County Jurisdiction
2. Prezone – the property is designated as Low-Density Residential in the General Plan, prezone proposed R-L-5 Low-Density Residential

**Planning Division Recommendation** ☒ Revise and Proceed ☐ Resubmit

**General Requirements:**

- ☒ That the applicant hereby agrees to hold the City of Hanford and all of its departments, officers, agents, and employees free and harmless of and from all claims of any kind or nature arising out of or by reason of the approval of this project.
- ☒ That approval of this project does not exempt compliance with all applicable sections of the Uniform Fire and Building Codes, Zoning Ordinance, Public Works Improvement Standards, and other City Ordinances.
- ☒ That the final map be submitted to the City Engineer and Community Development Department for compliance with the Tentative Subdivision Map approval prior to recording the final map.
- ☒ That all conditions of approval listed in this resolution by the City of Hanford be contained in the line drawing submitted for building permits.
- ☒ That in accordance with Title 16 of the Hanford Municipal Code, all conditions of this subdivision listed herein, and contained in subsequent improvement agreements, excluding the landscape district, must be completed and accepted for maintenance by the City Council prior to the final building inspection and occupancy permits being issued for the first house in the subdivision.
- ☒ That Vesting Tentative Tract 943 be developed consistent with the approved tentative tract map, attached as **Exhibit A**.
- ☒ That the tentative tract is subject to the mitigations cited in the Mitigation Monitoring and Reporting Program, attached as **Exhibit B**.

### **Right-to-Farm:**

- ☒ Notwithstanding any other provision in this Chapter, agricultural operations are the principal and favored use of land in the areas of Kings County designated “Agricultural” in the Kings County General Plan and included in the agricultural zone districts of the Kings County zoning ordinance. In order to implement Policy LU 8.2 and Program LU 8.2-A of the city of Hanford General Plan, there is hereby adopted in the city of Hanford a policy to (1) protect agricultural land, operations, and facilities from conflicting use due to the encroachment of incompatible, non-agricultural uses of the land in agricultural areas of the county, and (2) to advise developers, owners, and subsequent purchasers of property in the city of Hanford within one (1) mile of the city’s urban limit line of the inherent potential inconveniences and discomforts often associated with agricultural activities and operations, including, but not limited to, equipment and animal noise; farming activities conducted on a 24-hour a day, 7-days a week basis; odors from manure, fertilizers, pesticides, chemicals, or other sources; the aerial and ground application of chemicals and seeds; dust; flies and other insects; and smoke from agriculture operations.
- ☒ That no lawfully established and otherwise lawful agricultural activity, operation, or facility, or appurtenances thereto, conducted or maintained for commercial agricultural purposes in a manner consistent with proper and accepted customs and standards as established and followed by similar agricultural operations in the same locality, shall be or become a nuisance, private or public, due to any changed condition in or about the locality, including, but not limited to, the encroachment of non-agricultural uses such as residences.
- ☒ In order to carry out the goals and policies of the city of Hanford General Plan, and the provisions of this chapter, the following notices and disclosures shall be required:
- ☒ All approvals for improvement or development of property including without limitation application for rezonings, land divisions, zoning permits, and residential building permits, on property in the city of Hanford within one (1) mile of the city’s urban limit line, shall include a condition that notice and disclosure of this agricultural land use policy be given by the applicant, or the owner if different from the applicant. The applicant, or owner if different from the applicant, shall also acknowledge the contents of the notice and disclosure, which includes a description of the property the notice and disclosure pertains to, in the Official Records of the Kings County Recorder, and recorded at the applicant’s own expense.

### **Zoning:**

- ☒ That all requirements of the R-L-5 Low-Density Residential district shall apply.

### **Dwelling Units per Lot** (Section 17.10.050)

- ☒ That not more than one dwelling unit shall be allowed on each lot, unless approved as an accessory use to an allowed or approved conditional use, or approved as an accessory dwelling unit, in accordance with Section 17.60.030 of the Hanford Municipal Code.

### **Coverage** (Section 17.10.060)

- ☒ That the maximum overage shall be determined by the combined building setback requirements, accessory structure limitations, and off-street parking requirements.

**Building Setback Area** (Section 17.10.070)

- ☒ That no structure shall be placed within a building setback area.
- ☒ The front building setback area shall be 15 feet from the front lot line for livable space and 20 feet for garages, carports, and other non-livable building space.
- ☒ That the rear building setback shall be 15 feet from the rear lot line, except where there is a landscape easement with a wall or fence on the rear of the lot, then the rear building setback shall be 20 feet.
  - ☒ The rear building setback area shall be increased by 10 feet for buildings over one-story high.
- ☒ That where there is a landscape easement with a wall or fence on the street side of the lot the side yard setback area shall be measured from the easement area instead of the side lot line.

**Distance between Structures** (Section 17.10.080)

- ☒ The minimum distance between structures shall be 10 feet, except as provided by the building code.

**Height of Structures** (Section 17.10.090)

- ☒ The maximum structure height shall be 35 feet.

**Driveways** (Section 17.10.110)

- ☒ That the width of a driveway and any paved area shall not cumulatively exceed 40% of the width of the lot's street frontage on which the driveway and any paved area faces. In the case of "L" or "U" shaped driveways or other configurations besides perpendicular driveways, the paved area of these driveways shall not exceed 50% of the front building setback area.
- ☒ That on corner lots, the driveway shall be located on the side of the lot adjacent to the interior lot line.
- ☒ That on key lots, the driveway shall be located on the side of the lot, which is not adjacent to the rear lot line of the adjacent reverse corner lot.

**Usable Open Space** (Section 17.10.150)

- ☒ That each lot shall provide for a usable open space area of a minimum 400 square feet that is a minimum 15 feet wide.

### **Landscaping** (Section 17.10.160)

- ☒ That landscaping be provided in accordance with Section 17.52 Landscape Standards of the Hanford Municipal Code.
- ☒ That except for driveways and approved parking areas all yard areas and setback areas visible from the street shall be landscaped with live plant materials and ornamentation common to the Hanford area or up to 100% of the yard and setback area may be landscaped with artificial turf and other permeable surfaces.
- ☒ That two street trees, a minimum 15 gallon size, shall be planted on all lots 6,000 square feet or greater. One of the two shall be planted 12 feet (no greater or no less) from the face of the front lot line street curb.
- ☒ That one street tree, a minimum 15 gallon size, shall be planted on all lots less than 6,000 square feet. The tree shall be planted in the parkway. If there is no parkway, the tree shall be planted four feet behind the sidewalk.
- ☒ That there shall be two additional street trees, a minimum 15 gallon size, planted on all corner lots in the parkway adjacent to the street side lot line.
- ☒ That all species of trees shall be selected from a list approved by the City Parks and Recreation Commission.
- ☒ That each lot owner within Tentative Tract 943 shall care for and maintain the trees and lawn area located in the parkway in front of their lot(s).
- ☒ For corner lots, the lot owner shall care for and maintain the parkway trees and land area along the street-side of their lot. The parkway is defined as that land area located between the street curb and the public sidewalk.

### **Noise:**

- ☒ That construction equipment is muffled and construction activities be limited to the hours between 7:00 a.m. to 10:00 p.m., Monday through Friday, unless the construction is within the enclosed structure or approved by the Community Development Department.
- ☒ That noise from fixed mechanical equipment, when measured at the property line, meets the standard of the Hanford Noise Element.

### **Rooftop Equipment** HMC Section 17.50.100

- ☒ That all elevator housing and mechanical equipment located on the roof of any building shall be screened from adjacent views and contained within a completely enclosed penthouse or portion of the same building having walls and roofs with construction and appearance similar to the building.

### **Outdoor Lighting Standards** HMC Section 17.50.140

- ☒ That all lights and light fixtures, except public street lights, shall be located, aimed or shielded so as to minimize light trespassing across property boundaries or skyward.
- ☒ That no lights or light fixtures shall flash, revolve, blink or otherwise resemble a traffic control signal or operate in such a fashion to create a hazard for passing traffic.
- ☒ That building mounted lighting fixtures shall be attached only to the walls of the building. The top of a light fixture attached to a building wall shall not be higher than the top of the building parapet or the top of the roof eave, whichever is lower.
- ☒ That canopy ceiling light fixtures shall be recessed or the sides of the lens area shall be shielded in order to eliminate emission of horizontal light.
- ☒ That mercury vapor lamps shall be a fully shielded fixture with all light directed on-site.
- ☒ That freestanding light fixtures shall not exceed eighteen (18) feet in height measured from the top of a light fixture to the adjacent grade at the base of the support for that light fixture.

**Tents, Tarps, and Other Coverings** (Section 17.50.130)

- ☒ That no front or side building setback area shall be covered by tents, tarps, cloth, fabric, or a wood or metal covering or structure except for the following:
  - ☒ Standard window and door awnings
  - ☒ Ornamental covers, such as a sidewalk or entry awning trellis, or other similar improvement intended as an improved passageway or for aesthetic purposes providing architectural integrity with the building to which it is attached. Supports shall be ninety (90) percent open and shall not be enclosed.

**Dust Control:**

- ☒ That the appropriate dust-control practices of the San Joaquin Valley Air Pollution Control District shall be implemented.
- ☒ That the any necessary permits be obtained through the San Joaquin Valley Air Pollution Control District.



## **BUILDING DIVISION**

### **TT 943**

Contact Building Official: Tom Webb (559) 585-2584

Concerning questions that you may have on the conditions listed below:

#### **Soils:**

1. That a preliminary soils report, prepared by a qualified soil's engineer, be provided to the Engineering and Building Departments prior to approval of Subdivision Improvement Plans.
2. That a final soils report, prepared by a qualified soils engineer, be provided to the Engineering Department and Building Division prior to acceptance of the subdivision improvements by the City or issuance of building permits or whichever comes first.
3. That the developer retains the design engineer to inspect and verify that grading within the subdivision was constructed as per the approved design, and a copy of the report be provided to the Building Division prior to building permit issuance.

#### **Street Names and Addresses:**

1. That street addresses for each lot, as provided by the Building Division, be included on the subdivision final map.
2. That street names, as shown on the tentative subdivision map, be included on the subdivision final maps.
3. That all single family dwellings within the subdivision have illuminated address numbers 2-¼ inches high or be within an illuminated area with 3-½ inch high address numbers installed on the front most part of the building leading to the entrance. In either case the address numbers shall be of contrasting colors with the background.
4. That all landscaping requires permits and must meet requirements at time of installation.
5. That a map must be provided to show existing streets names of surrounding subdivisions that have City maintained streets.



## **City of Hanford Fire Department**

**Fire Prevention and Community Risk Reduction Division**

**Fire Marshal**

**Nikkie Chamberland**

### **City Of Hanford Fire Department Plan Review**

Approval of all projects does not exempt compliance with all applicable sections of the adopted Fire Codes and local city ordinances. All fire protection systems must be installed and operational prior to occupying the building. All permits shall be issued and paid for prior to scheduling any inspections with the fire department. Please contact the building department for the submittal process. To schedule an inspection please contact the building department at 559-585-2580

The scope of work shall be clearly stated on all the plans submitted for the permit. All deferred submittals shall be listed on the building plan page. All deferred submittals are required to be submitted within 30 days of building permit issuance.

Plan review number: TSM0009-23

Address: 12405 Hanford Armona Road, Hanford, CA 93230

Plan Reviewer: Nikkie Chamberland

Date: 9-30-2024

The following are comments that are applicable and pertain to the plans submitted: This project must comply with the latest California Fire Code.

- Project shall meet the minimum fire flow requirements per Appendix B & C of the CFC 2022; Provide the fire flows within one year
- New and existing residences that have an automatic sprinkler system, proposed accessory dwelling units shall have an automatic sprinkler system. A separate fire department permit will be required.
- Fire Riser Room:
  1. a separate room that contains the Fire Riser shall contain one man door, the room shall be a 2-hour rated room with adequate spacing to perform

maintenance, riser room shall be properly labeled with 4" lettering with contrasting background and a knox box shall be installed to contain the riser room key, fire sprinkler coverage required, emergency lighting and illuminated lighting required. The riser shall be interconnected with the fire alarm

- When a sprinkler system is required with more than 21 heads, the system shall be monitored by a central monitoring station. Fire alarm and fire detection systems required by Chapter 9 of CFC, CBC, shall be installed per NFPA 72.
- Knox FDC Locking Caps are required on all Fire Department Connections. A fire department access road is required for facilities that are protected by fire sprinklers and are more than 400 feet away; on-site fire hydrants and mains shall be provided where required by the AHJ. Provide a letter of certification from a licensed soil engineer on non-paved all-weather roads that provide fire access, which shall support a 40,000-lb fire apparatus at a minimum.
- All dead-end access roads of more than 150 must provide an approved turnaround or hammerhead and comply with city standards.
- All access roads shall not be less than 20 ft wide and 13 ft 6 inches
- Access road turning radius for fire apparatus/
  1. Inside turn: 20ft 10 inch
  2. Curb to Curb: 37 ft 3 inches
  3. Wall to Wal: 42 ft
- Temporary or permanent fire department access roads shall be constructed in accordance with City Standards ST-36. All weather access roads shall be in place prior to any combustible construction being brought onto the premises unless approved by the fire department.
- Additional Hydrants may be required, all hydrants shall be installed and accepted prior to combustibles being dropped on site. All hydrants shall be protected by bollards Hydrant spacing shall be as follows CFC 2022 Appendix C;
  1. Residential area- 500ft
  2. Commercial area-300ft
  3. A hydrant will be required within 50' of the Fire Department connection.
  4. Provide a turning template on Plan Review
- No traffic calming devices shall be installed without the Fire Department's approval
- Areas identified as "**Fire lanes**" must be identified as such per requirements set forth in the California Vehicle Code Section 22500.1.
  1. **Access roads 20-26 feet in width:** Fire lanes shall be on both sides of the fire apparatus access roads.
  2. **Access roads 26 to less than 32 feet in width:** Fire lanes shall be on one side of the fire apparatus access roads.
  3. **Access roads 32 feet in width or more:** No fire lanes required.
  4. **Markings shall include "No Parking- Fire Lane"**
- Locked gates installed across fire department access roads:

1. **Manual gates** with a chain lock require a **Knox Padlock** to be installed on them, or a **Knox Box** shall be installed on the exterior of the gate and a key to the lock on the gate must be placed in the Knox Box. (See [www.knoxbox.com](http://www.knoxbox.com) for current models)
  2. **Electric Gates** shall be equipped with an electric **Knox Key Switch**, at the gate location.
  3. In case of a loss of power, electrically operated gates shall have a means of backup power or shall default in the open position for immediate fire department access.
  4. At no time shall the width of the fire department access road be reduced below **20 feet wide through or at any gates** along the fire department's emergency access roads due to protruding objects from gate supports, frames, signs, access booths, curbs, etc.
  5. Provide a Knox Box for all structures and gates. In accordance with the 2019 CFC 506.1. Hanford Fire Department shall approve the location.
  6. Ordering Knox Box products can be done directly at [www.knoxbox.com](http://www.knoxbox.com). Click to choose your local fire department agency, enter "Hanford Fire Dept", and a list of products will populate for you to order.
- All address numbers shall be installed onto the building and shall be visible from the frontage street. The color of the address numbers shall be in a contrasting color to the building.

Size of Address Numbers:

- |                                                |                 |
|------------------------------------------------|-----------------|
| 1. Downtown area (existing buildings):         | 4 inch numbers  |
| 2. Buildings 20 ft. or less from the street:   | 6-inch numbers  |
| 3. Buildings 21- to 40-ft. from the street:    | 8-inch numbers  |
| 4. Buildings more than 40 ft. from the street: | 12-inch numbers |
- Operational Fire Permit is Required
  - Fire permits are required for all underground fire lines, overhead sprinklers, and fire alarms. These are all separate permits and will be charged accordingly. All deferred submittals shall be submitted, stamped, and approved prior to combustible on site.
  - Refer to the 2022 California Fire Code in governing codes

## **PUBLIC WORKS DEPARTMENT**

Contact Assistant Engineers: Steve Coodey or Robert Buchanan  
Concerning questions that you may have on the conditions listed below:

### **Tentative Tract 943- Silicon Valley Ranch**

#### **Maps and Plans:**

1. That the developer submit to the City Engineer a set of construction plans on 24" x 36" sheets for all required improvements. Plans shall be prepared by a registered civil engineer, and shall include a drainage and utility plan identifying sizes and location of sanitary sewer, storm drainage and water mains, curbs, gutters, sidewalks, masonry wall, street improvements and other infrastructure required for development. All plans shall be approved by the City Engineer and all other involved agencies before the release of the building permits.
2. That the developer shall submit to the City Engineer a set of construction plans on 24" X 36" size sheets for all required improvements. The plans shall be prepared by a licensed civil engineer and shall include a site plan showing all on-site and off-site improvements, including but not limited to, sanitary sewer, storm drainage, and water system infrastructure, refuse enclosure locations, public street & parking lot improvements, landscape & irrigation systems and all other improvements as required by the project conditions of approval and the City of Hanford Standards and Specifications. Improvement plans shall include all City of Hanford Construction Standard Detail's pertinent to the project. Plans must be approved by the City of Hanford and any other affected agencies before issuance of building or encroachment permits.

#### **Easements:**

1. That easements be designated on the recorded final map as required by the utility companies and where needed for providing service to streetlights as designated by the City of Hanford Engineering Department.
2. That a 20 foot easement established south of the centerline of Hume Avenue shall be dedicated to the city for the purposes of street right of way.
3. That an easement for storm drainage purposes be dedicated to the City where necessary to facilitate installation of storm drainage facilities connecting the portion of the development located on the west side of Aquifer Drive to the proposed storm drainage basin located on the east side of Aquifer Drive.
4. That all easements for irrigation ditches and/or irrigation pipelines be legally abandoned or relocated to the satisfaction of the City Engineer prior to acceptance of the subdivision improvements.

5. That an easement for sanitary sewer along the south side of Hume Avenue for gravity sewer pipeline, sewer lift station and force main shall be dedicated to the city. This dedication requirement is contingent on whether Tract 943 develops before Live Oak West Tract 909.
6. That all proposed landscape/public utility easements as shown on the tentative map be dedicated to the City and be included on the subdivision final map.

**Dedications:**

1. That all proposed streets and street extensions as shown on the tentative map be dedicated to the City, as public right-of-way, and any alterations of existing utilities be the responsibility of the developer.
2. That developer dedicate to the City, additional street right of way along the east side of Aquifer Drive, between Hanford Armona Road and the southerly ultimate alignment of W. Spring Crest Drive property frontage to facilitate an overall street right of way width of 84 feet in conformance with City Standard Detail ST-23 ("Major Collector Street").
3. That the developer dedicate to the City, full right of way between the southerly ultimate alignment of W. Spring Crest Drive and Hume Avenue, a width of 84 feet to establish the extension of Aquifer Drive in conformance with City Standard Detail ST-23 ("Major Collector Street"). Aquifer shall include offset as shown on the tentative map to align with the approved tentative map for Live Oak West Tract 909.
4. That the developer dedicate to the City, additional street right of way along the south alignment of W. Spring Crest Drive property frontage to facilitate an overall street right of way width of 68 feet in conformance with City Standard Detail ST-26 ("Minor Collector Street").
5. That the developer dedicate to the City, street right of way along the Hume Avenue property frontage to facilitate an overall street right of way width of 88 feet in conformance with City Standard Detail ST-23 modified for additional parkway strip equaling 12 feet for a total street right of way of 88 feet.
6. That developer dedicate to the City, the proposed onsite drainage basin for Tract 943 drainage purposes.

**Park Improvements:**

1. As a condition of approval of a final subdivision map or parcel map, the subdivider shall dedicate land, pay a fee in lieu thereof, or both, at the option of the city, for park or recreational purposes, at the time and according to the standards and formula contained in this title. The land, fees, or combinations thereof, are to be used only for the purpose of providing park or recreational facilities to serve the subdivision.

***Utilizing Quimby Act, park space for new development shall be provided at a ratio of 3 acres per 1,000 residents.***

**Calculation:**

$326 \text{ units} \times 3.67 \text{ persons per household} = 1196 \text{ persons}$

$1196 \text{ residents} \div 1,000 = 1.196$

$1.196 \times 3 \text{ acres} = 3.58 \text{ acres of park space required}$

The applicant proposes a 3.58-acre park which shall be fully developed with Phase I of the subdivision.

**Street Improvements:**

1. That the improvements consisting of sanitary sewers, storm sewers, water mains, concrete curbs, gutters, sidewalks, street lights, street subgrading and surfacing, signage and striping and all other improvements be installed in accordance with Chapter 16.24 "Improvements" of the Hanford Municipal Code, and this resolution pertaining to subdivision improvements in effect at the time of filing the tentative map.
2. That all streets within the subdivision shall be developed to residential street standards (City standard ST-33 cul-de-sacs and ST-32 residential through streets), except the following:
  - a) Aquifer Drive shall be developed as a Major Collector street with an 84 foot right of way width in conformance with City Std. ST-17 and ST-23 and a traffic index of 8. Developer shall be required to construct the remaining width of right of way on the east side of Aquifer Drive from Spring Crest to Hanford Armona Road. North of the project boundary, curb and gutter as well as the curb return at the southeast corner of Hanford Armona Road and Aquifer Drive shall be installed. Sidewalk can be deferred until such time as the Not A Part parcel is developed.
  - b) Develop Aquifer Drive full width right of way (84 feet) street improvements in conformance with City Standard ST-17 and ST-23 along both east and west boundary of property being developed south of Spring Crest Drive to Hume Avenue. With a traffic index of 8.
  - c) Spring Crest Drive shall be developed as a Minor Collector street with a 68 foot width in conformance with City Standard Detail ST-17 and ST-26 with a traffic index of 6. Developer shall be required to construct the remaining width of right of way on the south side of Spring Crest Drive from the west boundary of the development to Aquifer Drive.
  - d) Hume Avenue shall be developed as a Major Collector street with an 88 foot right of way width in conformance with City Standard Detail ST-17 and ST-23, modified to allow for additional park strip behind curb with a traffic index of 8. Developer will only be required to construct two-thirds (2/3) road width along project frontage. The eastbound lane shall include a 12 foot



travel lane with a 4 foot paved shoulder and a 4 foot unpaved shoulder containing a swale. If Tract 943 develops prior to Live Oak North Tract 909, the striping for Hume Avenue shall consist of matching the centerline striping as installed with Live Oak North Tract 902. If Live Oak North Tract 909 develops Hume Avenue prior to Tract 943, then striping shall be removed and a 14 foot continuous left turn lane shall be installed from Aquifer Drive to 12<sup>th</sup> Avenue.

3. That streetlights be installed throughout subdivision in conformance with City standard GE-56. Streetlights shall be located as designated by City Engineer.
4. That the development is subject to a transportation mitigation impact fee as required by City Ordinance No. 90-09 and any revisions thereof. Developer shall be entitled to a credit against subject development fee for improvements constructed by developer within Hume Avenue and Aquifer Drive, consisting of 22 feet of asphalt pavement section as measured from centerline of road. Reimbursement are paid according to the City of Hanford Development Impact Fee Study dated September 2019.

**Backup Parkway Improvements:**

1. That the developer shall design and construct the following improvements along Hume Avenue, Spring Crest Drive and Aquifer Drive frontages of proposed subdivision.
  - a. A six (6) ft. minimum high ornamental, masonry block fence with continuous footing. Wall shall be treated with an anti-graffiti repellent.
  - b. A 4 ½ ft. wide sidewalk per City Standard Detail CO-14.
  - c. Soil preparation, automatic irrigation and landscaping.
  - d. Landscape plans for right-of-way and 12 ft. wide landscape easement area along Hume Avenue property frontage from the back of curb to the block wall.
2. The species of tree and plants are to be selected from a list approved by the City Street Tree Commission.
3. That the design location of the masonry wall and landscape plans shall be approved by the Community Development Department and City Engineering Department prior to recording a subdivision final map. And the approval of block wall and landscape improvements shall be submitted with initial submittal of project improvement plans.
4. All above ground pedestals and other utility boxes shall be located between back of sidewalk and masonry wall/fence.

**Existing Wells:**

1. That all existing wells on the property be abandoned in accordance with State of California standards.

**Restricted Access:**

1. That a one-foot reservation strip be established at the end or sides of the roads abutting unsubdivided property and indicated on the subdivision final map.
2. That all access be restricted from the Hume Avenue, Aquifer Drive and Spring Crest Drive right-of-way for lots backing or siding onto said rights-of-way. A restricted access designation shall be depicted on all recorded final maps.
3. That the developer construct a barricade to City standards at the end of each future through streets.

**Sewer Improvements:**

1. That the developer's engineer provide a sanitary sewer master plan complete with calculations for the entire subdivision that coincides with the Live Oak West Sanitary Sewer Master Plans for City review and approval prior to recording a subdivision final map for the first phase of development. Consideration shall be given for future areas of development located adjacent to proposed subdivision per the City Sanitary Sewer Master Plan.
2. That a minimum 15-inch diameter sanitary sewer main be installed within Aquifer Drive between Spring Crest Drive and Hume Avenue. Applicant shall be entitled to a reimbursement agreement for over sizing in accordance with City Municipal Code Section 13.08, or any revisions thereof.
3. That developer install a sanitary sewer lift station per the Live Oak West Sanitary Sewer Master Plan, located at the southwest corner of Hume Avenue and Aquifer Drive.
4. That a 6-inch diameter sanitary sewer force main be installed within Hume Avenue from the sanitary sewer lift station west of Aquifer Drive along development frontage and connecting to an existing gravity manhole at the east project boundary. Applicant shall be entitled to a reimbursement agreement for over sizing in accordance with City Municipal Code Section 13.08, or any revisions thereof.

**Storm Drainage Improvements:**

1. That the developer's engineer provide a storm drainage master plan complete with calculations for the entire subdivision for City review and approval prior to recording a subdivision final map for the first phase of development.

2. That the developer is required to complete construction of the storm drain basin with the first phase of the subdivision. The basin shall be designed in conformance with the City of Hanford's Storm Drainage Design Criteria specifications and shall include a six (6) ft. minimum high ornamental, masonry block fence with continuous footing along the Aquifer Drive and Hume Avenue frontages, a 24' wide drive approach per City Standard Detail CO-41 and access gates per City Standard Detail GE-26. A chain-link fence with continuous footing per City Standard Detail GE-23 shall be constructed along non street basin boundaries.
3. That developer is required to comply with the State of California Water Resources Control Board requirements specifically related to the National Pollution Elimination System Permit process.

**Water System:**

1. That the developer's engineer provide a Water System Master Plan complete with calculations for the entire subdivision for City review and approval prior to recording a subdivision final map for the first phase of development. Consideration shall be given for future areas of development located adjacent to proposed subdivision, as shown on the city Water Master Plan.
2. That a minimum 18 inch diameter water main and appurtenances, be extended along property frontage within Aquifer Avenue. Applicant shall be entitled to a refund for water main oversizing in accordance with City Municipal Code Section 13.04.
3. That a minimum 12 inch diameter water main and appurtenances, be extended along property frontage within Hume Avenue. Applicant shall be entitled to a refund for water main oversizing in accordance with City Municipal Code Section 13.04.
4. That all existing water wells be abandoned in conformance with State of California Department of Health Standards.
5. That developer is entitled to a reimbursement agreement in accordance with City Municipal Code section 13.08 for sanitary sewer main improvements constructed within Hume Avenue, which also provides a benefit to others. Costs for sanitary sewer main improvements installed within Hume Avenue, if applicable, shall be per the City of Hanford Development Impact Fee Study document dated September of 2019. Reimbursement cost shall be per the Fee Study at time of acceptance.

**Assessment District:**

1. That the developer enters into an agreement for the formation of a Community Facilities District (CFD) for the maintenance of landscaping, decorative block wall/

fencing, roadways, streetlights, curb and gutter, sidewalk, signage, storm drain system and basin and emergency services.

2. That prior to funds of the tax assessment district being obtained, the developer will be responsible for the maintenance of all items listed above.

**Impact Fees:**

1. That development is subject to a Police Development Impact Fee as required by City Ordinance No. 98-14, and any revisions thereof. Fee payable with each building permit.
2. That development is subject to a Fire Development Impact Fee as required by City Ordinance No. 98-14, and any revisions thereof. Fee payable with each building permit.
3. That development is subject to a Park Development Impact Fee as required by City Ordinance No. 90-10 and any revisions thereof. Fee payable with each building permit.
4. That development is subject to a Transportation mitigation impact fee as required by City Ordinance No. 90-09 and any revisions thereof. Fee payable with each building permit.
5. That the development is subject to a Wastewater System Development Impact fee as required by City Ordinance No. 98-14, and any revisions thereof. Fee payable with each building permit.
6. That development is subject to a Storm Drainage Development Impact fee, as required by City Ordinance No. 98-14, and any revisions thereof. Fee shall be paid prior to recording of subdivision final map for each phase of development.
7. That development is subject to a Water System Development Impact Fee as required by City Ordinance No. 98-14 or any revisions thereof. Fee payable with each building permit.
8. That development is subject to a Sanitary Sewer area of benefit assessment fee in accordance with City Ordinance No. 92-03 and any revisions thereof. Subject fee shall be paid prior to recording a subdivision final map.



**ANNEXATION NO. 161**  
**ANNEXATION TO THE CITY OF HANFORD**  
**GEOGRAPHICAL DESCRIPTION**

Portions of the Northeast and Northwest Quarters of Section 3, Township 19 South, Range 21 East, MDB&M, in the State of California, County of Kings described as follows:

Beginning at the Northwest corner of said Northeast Quarter being a point on the existing city limits of the City of Hanford;

Thence along the existing city limits the following courses:

1. South  $89^{\circ}23'35''$  East along the North line of last said Quarter, a distance of 1,057.40 feet to the Northwest corner of County Tract 876 as depicted on a map recorded in Book 24 at Page 88 of Licensed Surveyors' Plats in the Office of the Kings County Recorder;
2. South  $00^{\circ}33'03''$  West, along the West line of last said Tract, a distance of 2,866.68 feet to a point on the South line of said Northeast Quarter;
3. North  $89^{\circ}32'03''$  West along said South line of said Northeast Quarter, a distance of 1051.03 feet to the Center Quarter Corner of said Section 3;
4. North  $89^{\circ}32'22''$  West along the South line of said Northwest Quarter a distance of 261.40 feet to an angle point in the city limits of the City of Hanford per LAFCO Resolution No. 05-17 as depicted on a map recorded in Book 21, at page 66 of Licensed Surveyors' Plats in the Office of the Kings County Recorder;

Thence leaving the existing city limits of the City of Hanford the following courses:

5. Continuing along said South line of the Northwest Quarter, North  $89^{\circ}32'22''$  West a distance of 397.32 feet to the southwest corner of Parcel 2 as shown on a map recorded in Book 5 at Page 72 of Parcel Maps of Licensed Surveyors' Plats in the Office of the Kings County Recorder;
6. North  $00^{\circ}44'57''$  East, along the west line of last said Parcel 2 a distance of 646.91 feet to and angle point in said west line of said Parcel 2;
7. Continuing along the West line of said Parcel 2, North  $02^{\circ}14'30''$  East, a distance of 656.86 feet to the Northwest corner of said Parcel 2, also being a point on the existing city limits of the City of Hanford;

Thence along the existing city limits the following courses:

8. South  $89^{\circ}38'44''$  East along the North line of said Parcel 2 a distance of 634.20 feet to the Northeast corner of said Parcel 2, also being a point on the west line of said Northeast Quarter;
9. Thence North  $00^{\circ}25'25''$  East, along last said West line, a distance of 1,564.66 feet to the Point of Beginning

Containing 88.89 Acres more or less.

**DRAFT**





VESTING TENTATIVE  
SUBDIVISION MAP TRACT #943  
SILICON VALLEY RANCH

A PORTION OF THE WEST HALF OF THE NORTHEAST QUARTER & A PORTION OF THE EAST HALF OF THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 3, TOWNSHIP 19 SOUTH, RANGE 21 EAST, MOUNT DIABLO BASE & MERIDIAN, IN THE CITY OF HANFORD, COUNTY OF KINGS, STATE OF CALIFORNIA.

APPLICANT/OWNER:  
SILICON VALLEY RANCH, LLC  
PHIL R. BOYCE  
20900 BOYCE LANE  
SARATOGA, CA 95070  
408-867-3737

ZUMWALT  
HANSEN &  
A Company  
609 N. IRWIN STREET  
HANFORD, CA 93230  
TEL: (559) 582-8898  
WWW.ZKINC.COM

LEGAL DESCRIPTION

PARCEL 1: 011-040-008 AND 011-040-010  
ALL THAT PORTION OF THE WEST HALF OF THE NORTHEAST QUARTER OF SECTION 3, TOWNSHIP 19 SOUTH, RANGE 21 EAST, MOUNT DIABLO BASE AND MERIDIAN, ACCORDING TO THE OFFICIAL PLAT THEREOF, DESCRIBED AS FOLLOWS:  
BEGINNING AT THE NORTHWEST CORNER OF SAID NORTHEAST QUARTER; THENCE SOUTH ALONG THE WEST LINE THEREOF A DISTANCE OF 43.26 CHAINS, MORE OR LESS, TO THE SOUTHWEST CORNER OF SAID NORTHEAST QUARTER; THENCE EAST ALONG THE SOUTH LINE OF SAID QUARTER SECTION; 15.64 CHAINS TO THE CENTER OF A WATER DITCH; THENCE NORTHERLY ALONG THE CENTER LINE OF SAID WATER DITCH 43.26 CHAINS TO A POINT IN THE NORTH LINE OF SAID NORTHEAST QUARTER; THENCE WEST ALONG SAID NORTH LINE A DISTANCE OF 16.25 CHAINS, MORE OR LESS, TO THE POINT OF BEGINNING.  
PARCEL 2: 011-040-027  
THAT PORTION OF THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 3, TOWNSHIP 19 SOUTH, RANGE 21 EAST, MOUNT DIABLO BASE AND MERIDIAN, IN THE COUNTY OF KINGS, STATE OF CALIFORNIA, MORE PARTICULARLY DESCRIBED AS PARCEL 2 OF PARCEL MAP RECORDED IN BOOK 5, PAGE 72, OF PARCEL MAP RECORDED IN BOOK 5, PAGE 72 OF PARCEL MAPS, KINGS COUNTY RECORDS.

LEGEND

|      |                                   |     |                          |
|------|-----------------------------------|-----|--------------------------|
| AC   | ASPHALT PAVING                    | EM  | ELECTRIC METER           |
| BW   | BACK OF WALK                      | ES  | EXISTING STREET LIGHT    |
| CRN  | ASPHALT CROWN                     | EP  | FIRE HYDRANT             |
| EP   | EDGE OF PAVEMENT                  | FL  | GATE POST                |
| FL   | FLOW LINE                         | GDP | GUY POLE                 |
| GDP  | GUARD POST                        | GV  | IRRIGATION AG WELL       |
| GV   | GAS VALVE                         | INV | IRRIGATION STANDPIPE     |
| OG   | ORIGINAL GROUND                   | OG  | IRRIGATION VALVE         |
| SSCO | SANITARY SEWER CLEANOUT           | SW  | TOPO                     |
| SW   | SIDEWALK                          | TC  | SANITARY SEWER CLEANOUT  |
| TC   | TOP OF CURB                       | TP  | SANITARY SEWER MANHOLE   |
| TP   | TELEPHONE POLE                    | WBO | SIGN                     |
| WBO  | WATER BLOW-OFF                    |     | S.D. CATCH BASIN MANHOLE |
|      | EXISTING ELECTRIC LINE (OVERHEAD) |     | STORM DRAIN MANHOLE      |
|      | EXISTING GAS LINE                 |     | TELEPHONE CHRISTY BOX    |
|      | EXISTING WOOD FENCE               |     | TELEPHONE PEDESTAL       |
|      | EXISTING CHAINLINK FENCE          |     | TRANSFORMER POLE         |
|      | EXISTING POST & WIRE FENCE        |     | UTILITY POLE             |
|      | EXISTING AC SURFACING             |     | WATER METER              |
|      | EXISTING CONCRETE SURFACE         |     | WATER VALVE              |
|      | NO REAR OR SIDE ACCESS            |     |                          |
|      | BENCHMARK                         |     |                          |
|      | DOWN GUY                          |     |                          |

LOT INFORMATION

|                 |     |
|-----------------|-----|
| PHASE I LOTS:   | 135 |
| PHASE II LOTS:  | 107 |
| PHASE III LOTS: | 84  |
| TOTAL LOTS:     | 326 |

AREA

|                  |          |
|------------------|----------|
| PHASE I GROSS:   | 31.84±AC |
| PHASE II GROSS:  | 24.85±AC |
| PHASE III GROSS: | 18.33±AC |
| TOTAL SITE:      | 75.02±AC |

|                             |          |
|-----------------------------|----------|
| INTERIOR STREET DEDICATION: | 17.48±AC |
| PHASE I:                    | 8.85±AC  |
| PHASE II:                   | 4.58±AC  |
| PHASE III:                  | 4.05±AC  |
| EXTERIOR STREET DEDICATION: | 4.91±AC  |
| PHASE I:                    | 1.19±AC  |
| PHASE II:                   | 2.46±AC  |
| PHASE III:                  | 1.26±AC  |
| TOTAL STREET DEDICATION:    | 22.39±AC |

|                         |        |
|-------------------------|--------|
| STORM BASIN DEDICATION: | 3.00AC |
| PARK:                   | 3.58AC |

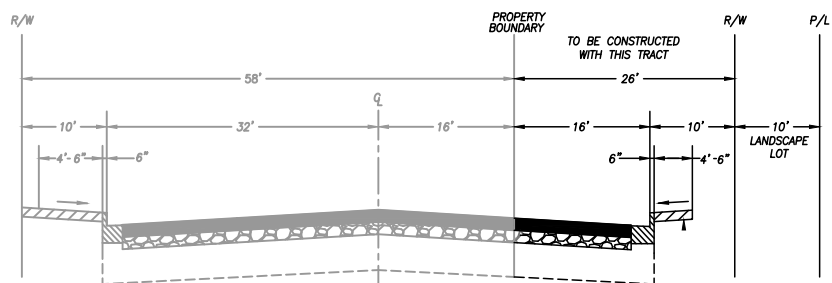
|                             |         |
|-----------------------------|---------|
| LANDSCAPE DEDICATION:       |         |
| PHASE I: LOTS A-C           | 0.28±AC |
| PHASE II: LOTS D-E          | 0.38±AC |
| PHASE III: LOTS F-I         | 0.43±AC |
| TOTAL LANDSCAPE DEDICATION: | 1.09±AC |

NOTES

- DATE OF PREPARATION: MARCH 21, 2024
- GENERAL PLAN DESIGNATION: LOW DENSITY RESIDENTIAL
- CITY ZONING: R-L-5
- ALL DISTANCES SHOWN ARE IN FEET & DECIMALS THEREOF AND ARE APPROXIMATE
- OFFSITE STREETS = 4.91 AC; ONSITE STREETS = 17.48 AC; LOTS = 46.06 AC; PARK & BASIN = 6.58 AC
- EXISTING LAND USE: AG
- PROPOSED LAND USE: SINGLE FAMILY RESIDENTIAL (100% OF SITE)
- NATURAL GAS BY: THE GAS COMPANY
- TELEPHONE BY: AT&T
- POWER BY: SOUTHERN CALIFORNIA EDISON CO
- CABLE T.V. BY: COMCAST
- DOMESTIC WATER BY: CITY OF HANFORD
- SEWAGE DISPOSAL BY: CITY OF HANFORD
- REFUSE COLLECTION BY: CITY OF HANFORD
- DRAINAGE: SITE BASIN
- STORM DRAIN BASIN (PHASE I)

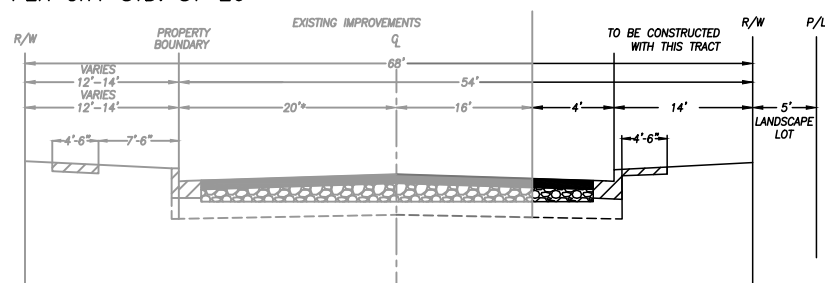
SECTION A-A  
AQUIFER DRIVE

NOT TO SCALE  
PER CITY STD. ST-23 (REVISED)



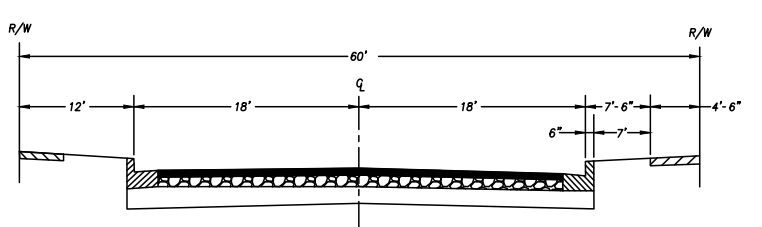
SECTION B-B  
W SPRING CREST DRIVE

NOT TO SCALE  
PER CITY STD. ST-26



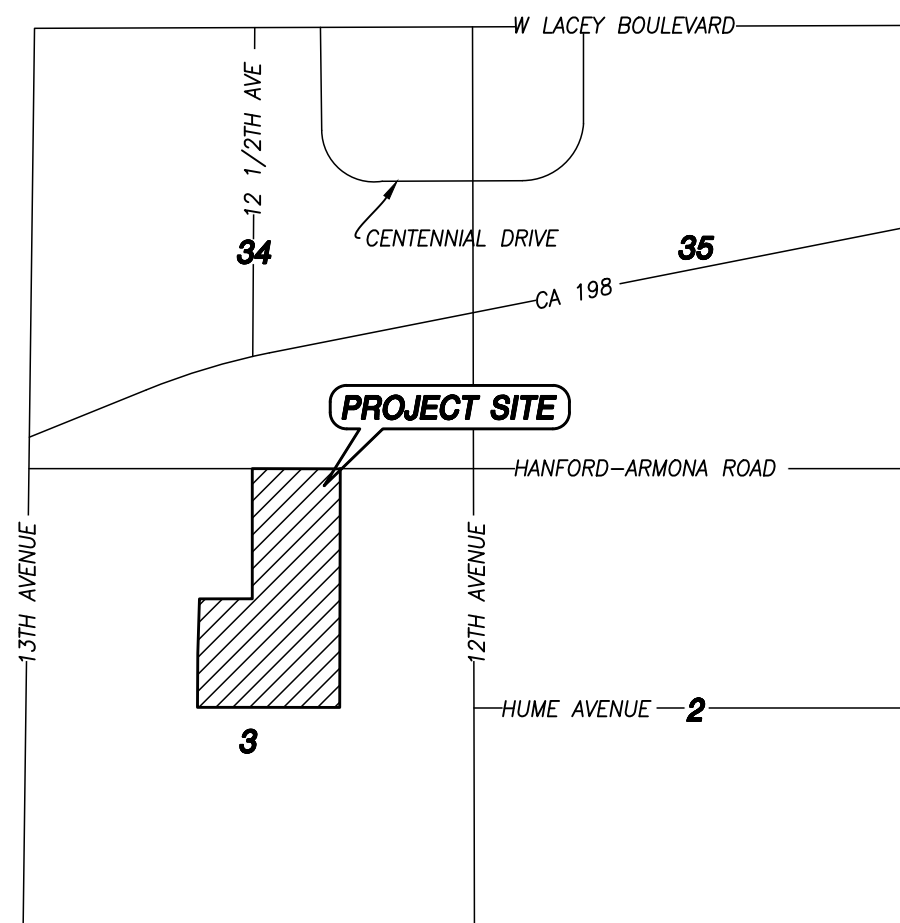
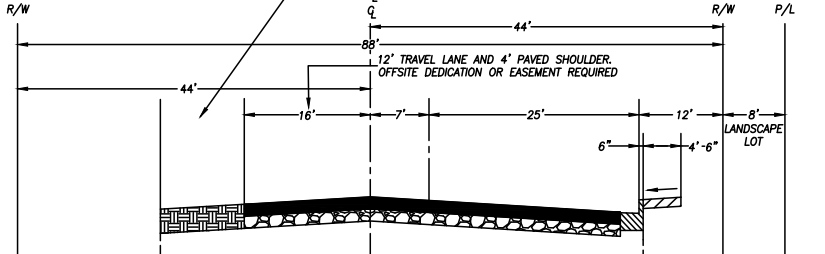
SECTION C-C  
INTERIOR STREETS

NOT TO SCALE  
PER CITY STD. ST-32



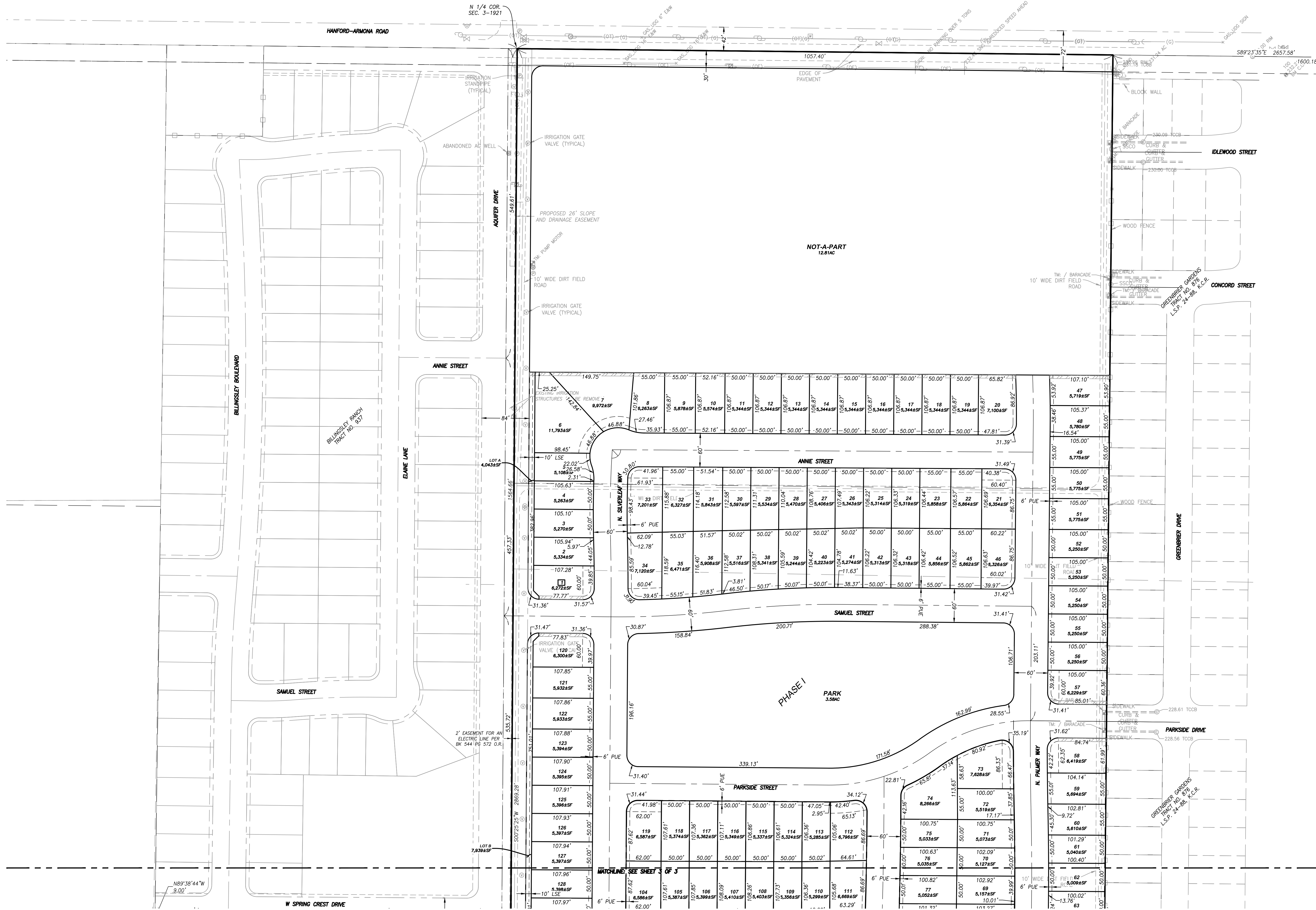
SECTION D-D  
HUME AVENUE

NOT TO SCALE  
PER CITY STD. ST-23

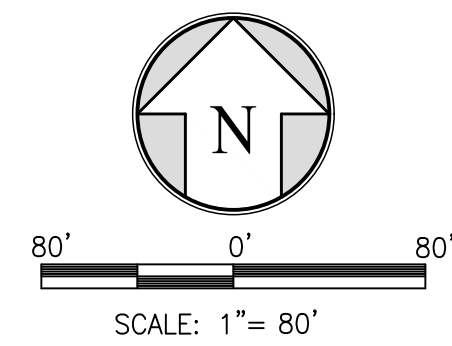


LOCATION MAP  
NOT TO SCALE









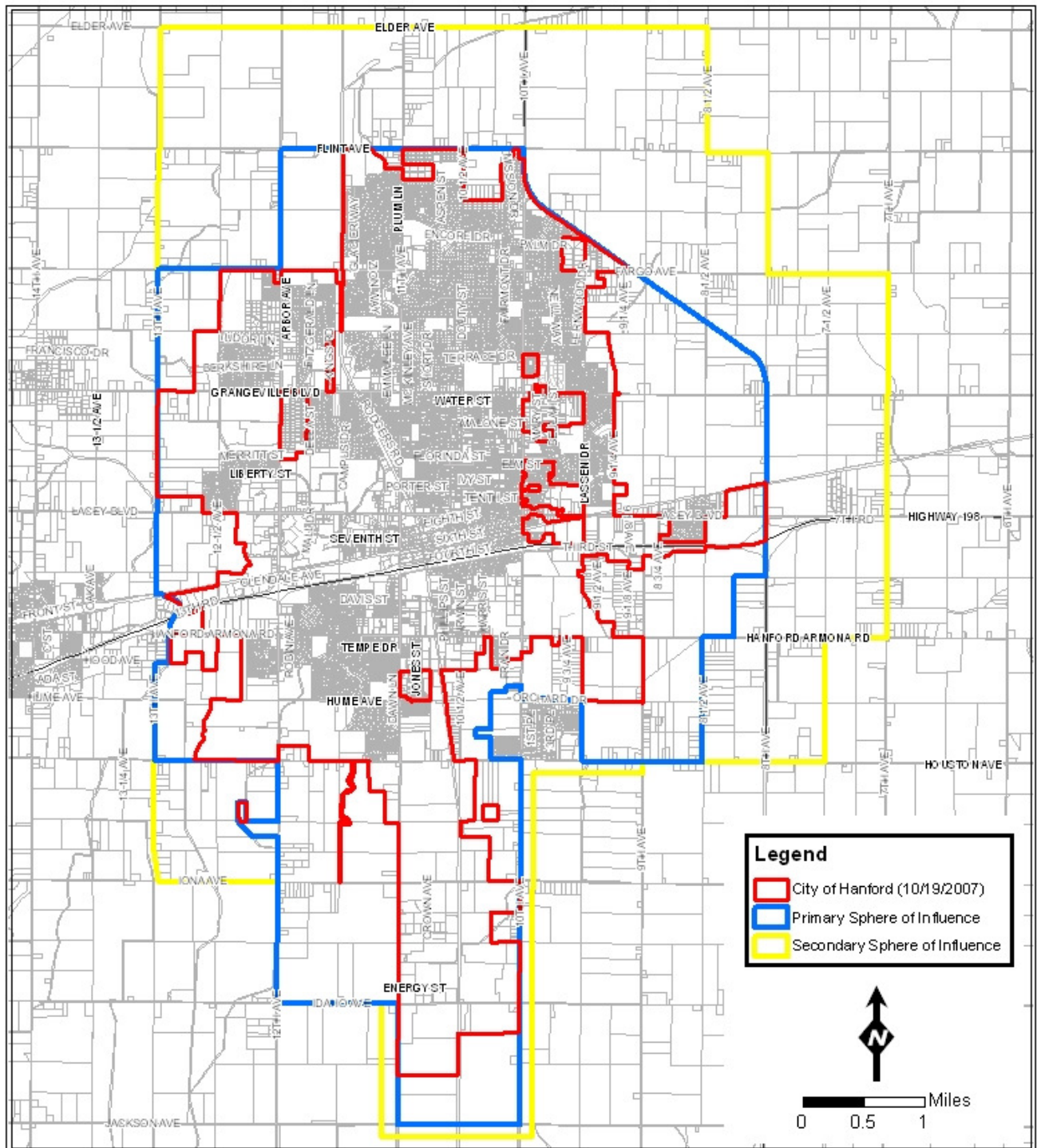
L:\PROJECTS\2022\220056\ACAD\TEMP\TMAP\220056-TSM.DWG 4/2/2024 2:46 PM







## Exhibit C CITY OF HANFORD 2008 SPHERE OF INFLUENCE



### Sewer Improvements

The developer's engineer will provide a sanitary sewer master plan with calculations for the entire subdivision that coincides with the Live Oak West Sanitary Sewer Master Plans prior to recording a subdivision final map for the development. Consideration shall be given for future areas of development located adjacent to proposed subdivision per the City Sanitary Sewer Master Plan.

A minimum 15-inch diameter sanitary sewer main is required to be installed within Aquifer Drive between Spring Crest Drive and Hume Avenue, subject to reimbursement for oversizing, in accordance with the Municipal Code Section 13.08.

The developer is required to install a sanitary sewer lift station, per the Live Oak West Sanitary Sewer Master Plan, to be located at the southwest corner of Hume Avenue and Aquifer Drive.

A 6-inch diameter sanitary sewer force main is required to be installed within Hume Avenue from the sanitary sewer lift station west of Aquifer Drive along development frontage and connecting to an existing gravity manhole at the east project boundary, subject to reimbursement for oversizing, in accordance with the Municipal Code Section 13.08.

### Storm Drainage Improvements

The developer's engineer will provide a storm drainage master plan, complete with calculations for the entire subdivision prior to recording a subdivision final map for the development. The developer will complete construction of the storm drain basin within the first phase of the subdivision. The basin is required to be designed in conformance with the City of Hanford's Storm Drainage Design Criteria specifications and is required to include a six (6) ft. minimum high ornamental, masonry block fence with continuous footing along the Aquifer Drive and Hume Avenue frontages, a 24' wide drive approach per City Standard Detail CO-41 and access gates per City Standard Detail GE-26. A chain-link fence with continuous footing per City Standard Detail GE-23 shall be constructed along non street basin boundaries. The developer is required to comply with the State of California Water Resources Control Board requirements specifically related to the National Pollution Elimination System Permit process.

### Water System

The developer's engineer is required to provide a Water System Master Plan complete with calculations for the entire subdivision for City review and approval prior to recording a subdivision final map for the first phase of development. Consideration shall be given for future areas of development located adjacent to proposed subdivision, as shown on the city Water Master Plan. A minimum 18-inch diameter water main and appurtenances, will be extended along property frontage within Aquifer Avenue. The applicant shall be entitled to a refund for water main oversizing in accordance with City Municipal Code Section 13.04. A minimum 12-inch diameter water main and appurtenances will be extended along the property frontage within Hume Avenue. Applicant shall be entitled to a refund for water main oversizing in accordance with City Municipal Code Section 13.04.

All existing water wells will be abandoned, in conformance with State of California Department of Health Standards.

#### Fire and Police

Fire and police services are adequate to service the area to be annexed. Impacts to fire and police services will be mitigated through payment of impact fees.

#### School

Educational services needed for the development of the Project will be provided by the Hanford Elementary School District (HESD) and Hanford Joint Union High School District (HJUHSD). Payment of fees to a school district is considered mitigation for project impacts on school facilities (Government Code Section 65996(a)). Therefore, the project applicant would be required to pay the statutory fees to accommodate the impact of project-generated student.

Notice of the proposed project was sent to the interested agencies for pre-consultation and normal consultation. A response was received by the Hanford Joint Union High School District stating, "This area is within our most impacted school boundary."

The City's role in development and managing school sites and programs is limited. The various school districts truly govern where a new school site would be located and when it would be necessary to construct or expand facilities, in order to adequately accommodate population growth. Elected governing school boards are responsible for budgeting and decision-making and the State Department of Education establishes school site and construction standards. The General Plan provides policy which focuses on collaboration with school districts in determining new school locations and utilizing school facilities for general public needs. School districts would be able to utilize the General Plan, along with other plans, standards, and codes, to establish new school sites and to make decisions on school amenities and cohesiveness with the surrounding area.

# City of Hanford

## Community Development Department

317 North Douty Street

Hanford, CA 93230

Office (559) 585-2580

FAX (559) 583-1633

Website: [www.cityofhanfordca.com](http://www.cityofhanfordca.com)

TDD/TYY, Dial 711



### CONSENT FOR ANNEXATION INTO THE CITY OF HANFORD

*Attach one form per property*

The undersigned hereby consents to have the property identified below annexed to the City of Hanford, without notice and hearing. Use additional pages if necessary.

1. Phillip R. Boyce

Name (printed)

Phil R. Boyce

Signature

2. Silicon Valley Ranch, LLC

Name (printed)

Signature

\_\_\_\_\_  
Address of Property

\_\_\_\_\_  
Assessor's Parcel Number

I have signed this consent as:

- (a) ☐ the owner of the subject property **and** a registered voter residing therein;
- (b) ☐ a registered voter residing therein;
- (c) ☒ the owner of subject property

1/2/2025

Date Signed

**DRAFT NOTICE OF PREPARATION/INITIAL STUDY FOR  
A FOCUSED ENVIRONMENTAL IMPACT REPORT**

---

**CITY OF HANFORD**

**SILICON VALLEY RANCH RESIDENTIAL  
SUBDIVISION PROJECT**



**JUNE 2024**

---





# DRAFT NOTICE OF PREPARATION/INITIAL STUDY FOR A FOCUSED ENVIRONMENTAL IMPACT REPORT

## SILICON VALLEY RANCH RESIDENTIAL SUBDIVISION PROJECT

**Prepared for:**



City of Hanford - Community Development Department  
317 N. Douty Street  
Hanford, CA 93230  
Contact Person: Gabrielle de Silva Myers  
Phone: (559) 585-2500

**Consultant:**



5080 California Avenue, Suite 220  
Bakersfield, CA 93309  
Contact: Jaymie L. Brauer  
Phone: (661) 616-2600

April 2024

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## **NOTICE OF PREPARATION/INITIAL STUDY FOR A FOCUSED ENVIRONMENTAL IMPACT REPORT**

Notice is hereby given that the City of Hanford will be the Lead Agency and will prepare a focused Environmental Impact Report (EIR) for the proposed Silicon Valley Ranch Residential Subdivision Project (Project). An Initial Study has been prepared along with this Notice of Preparation (NOP), which scopes out environmental topics for further review. The focused EIR will address the potential physical environmental effects of the proposed projects that have not been scoped out, as outlined in the California Environmental Quality Act (CEQA). The City is requesting comments on the scope and content of this focused EIR.

A scoping session will be held on July 8, 2024 at City Hall, in the Training Room, 319 N. Douty Street, Hanford, CA 93230. The scoping session, which is part of the focused EIR process, is the time when the City solicits input from the public and agencies on specific topics they believe should be addressed in the environmental analysis. The scoping process is designed to enable the City to determine the scope and content of the focused EIR, identify the range of actions, and identify potentially significant environmental effects, alternatives, and mitigation measures to be analyzed in the focused EIR.

### ***Project Location***

The Project is located within the Sphere of Influence for the City of Hanford and is anticipated for annexation. The Project is adjacent to Hanford Armona Road to the north, between Greenbrier Drive to the east and 13th Avenue to the west, and encompasses approximately 88.9 acres (APN 011-040-008, 010, and 027). The Project site is located within the Hanford USGS Quad, Section 3, Township 19S, Range 21E, Mount Diablo Base and Meridian (MDB&M).

### ***Project Description***

The Project proposes to construct a 326-lot residential subdivision within the City of Hanford Sphere of Influence. The Project will be annexed into the City under separate application. An approximately 12.5-acre portion of the site at the northeast corner of the property is intended to be removed via a lot-line adjustment.

The Project will be developed with a 326-unit single-family subdivision, a 3.58-acre park, and a three-acre retention basin. Lots will range between 5,000 to 6,000 square feet and would be developed with single-family residential units. Associated utility and right-of-way infrastructure would also be developed in accordance with City of Hanford standards and regulations.

Approvals include:

- Approval of Tentative Tract Map #943

- Prezoning – Because the project site does not currently have a City of Hanford zoning designation, prezoning of the site is required. The project site would be prezoned to the R-L-5 zone.
- Site Plan Review – The Project will require approval of an SPR
- Annexation into the city limits by Kings County Local Agency Formation Commission (LAFCo)

**Construction:**

Development of the Project is anticipated to occur over a 12-month period. Construction equipment will vary over the course of development and would include the following:

- Excavators/earth-moving equipment
- Depending on foundation system, auger rig, or pile-driving rig
- All-terrain forklifts
- A man/material hoist
- Truck cranes and potentially a tower crane (pending permit approval)
- Concrete trucks
- Dump trucks
- Street sweepers/water trucks for dust control
- Construction delivery trucks (typically box trucks of flat beds)
- Small tools (generators, light plants, compactors, air compressors)

As mandated by the California Environmental Quality Act (CEQA), the public review period for this document was 30 days (CEQA Section 15073[b]). The public review period began on June 21, 2024 and ended on July 22, 2024. For further information, please contact Gabrielle de Silva Myers, 317 N. Douty Street, Hanford, CA 93230, (559) 585-2500.

***Mailing Address and Phone Number of Contact Person***

Gabrielle de Silva Myers, Senior Planner  
City Hall  
317 N. Douty Street  
Hanford, CA 93230  
(559) 585-2500

***Findings***

As Lead Agency, the City of Hanford finds that the Project will have a significant effect on the environment. The Environmental Checklist (CEQA Guidelines Appendix G) or Initial Study (IS) (see *Section 3 - Environmental Checklist*) has identified one or more potentially significant effects on the environment. Pursuant to CEQA Guidelines Section 115064 (a)(1), an Environmental Impact Report (EIR) must be prepared if there is substantial evidence in light of the whole record that the proposed Project under review may have a significant effect on the environment and should be further analyzed to determine mitigation measures or project alternatives that might avoid or reduce project impacts to less-than-significant levels.

## **Notice of Preparation/Initial Study for a Focused Environmental Impact Report**

---

The City of Hanford has determined that preparation of a focused Environmental Impact Report for the Project is necessary.



## SECTION 1 - INTRODUCTION

### ***1.1 - Overview***

Silicon Valley Ranch, LLC. (the Applicant) proposes to develop approximately 88.9 acres to create residential lots and appurtenant infrastructure consistent with the City of Hanford General Plan Designation Low Density Residential and prezone District R-L-5.

### ***1.2 - California Environmental Quality Act***

The City of Hanford is the Lead Agency for this Project pursuant to the CEQA Guidelines (Public Resources Code Section 15000 et seq.). The Environmental Checklist (CEQA Guidelines Appendix G) or Initial Study (IS) (see *Section 3 – Initial Study*) provides an analysis that examines the potential environmental effects of the construction and operation of the Project. Section 15063 of the CEQA Guidelines requires the Lead Agency to prepare an IS to determine whether a discretionary project will have a significant effect on the environment. A Mitigated Negative Declaration (MND) is appropriate when an IS has been prepared, and a determination can be made that no significant environmental effects will occur because revisions to the Project have been made or mitigation measures will be implemented that reduce all potentially significant impacts to less-than-significant levels. Section 15064 (a)(1) states that an Environmental Impact Report (EIR) must be prepared if there is substantial evidence in light of the whole record that the proposed Project under review may have a significant effect on the environment and should be further analyzed to determine mitigation measures or project alternatives that might avoid or reduce project impacts to less-than-significant levels. A Negative Declaration (ND) may be prepared instead if the Lead Agency finds that there is no substantial evidence in light of the whole record that the project may have a significant effect on the environment. An ND is a written statement describing the reasons why the proposed Project, not otherwise exempt from CEQA, would not have a significant effect on the environment and, therefore, why it would not require the preparation of an EIR (CEQA Guidelines Section 15371). According to CEQA Guidelines Section 15070, an ND or MND shall be prepared for a project subject to CEQA when either:

- The IS shows there is no substantial evidence in light of the whole record before the agency that the proposed Project may have a significant effect on the environment; or
- The IS identified potentially significant effects, but:
  - Revisions in the project plans or proposals made by or agreed to by the Applicant before the proposed MND and IS are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur is prepared, and
  - There is no substantial evidence in light of the whole record before the agency that the proposed Project as revised may have a significant effect on the environment.

Based on the IS, the Lead Agency has determined that the environmental review for the proposed application can potentially result in a significant impact and requires that a focused EIR be prepared.

### ***1.3 - Impact Terminology***

The following terminology is used to describe the level of significance of impacts.

- A finding of “no impact” is appropriate if the analysis concludes that the Project would not affect a topic area in any way.
- An impact is considered “less than significant” if the analysis concludes that it would cause no substantial adverse change to the environment and requires no mitigation.
- An impact is considered “less than significant with mitigation incorporated” if the analysis concludes that it would cause no substantial adverse change to the environment with the inclusion of environmental commitments that have been agreed to by the Applicant.
- An impact is considered “potentially significant” if the analysis concludes that it could have a substantial adverse effect on the environment.

### ***1.4 - Document Organization and Contents***

The content and format of this IS/MND is designed to meet the requirements of CEQA. The report contains the following sections:

- *Section 1 – Introduction:* This section provides an overview of CEQA requirements, intended uses of the IS/MND, document organization, and a list of regulations that have been incorporated by reference.
- *Section 2 – Project Description:* This section describes the Project and provides data on the site’s location.
- *Section 3 – Environmental Checklist:* This section contains the evaluation of 21 different environmental resource factors contained in Appendix G of the CEQA Guidelines. Each environmental resource factor is analyzed to determine whether the proposed Project would have an impact. One of four findings is made: no impact, less-than-significant impact, less than significant with mitigation, or significant and unavoidable. If the evaluation results in a finding of significant and unavoidable for any of the 21 environmental resource factors, then an Environmental Impact Report will be required.
- *Section 4 – List of Preparers:* This section identifies the individuals who prepared the IS.
- *Section 5 – Bibliography:* This section contains a full list of references that were used in the preparation of this IS.

### ***1.5 - Incorporated by Reference***

The following documents and/or regulations are incorporated into this IS/MND by reference:

- City of Hanford 2035 General Plan (2017)
- City of Hanford 2016-2024 Adopted Housing Element
- City of Hanford Urban Water Management Plan
- City of Hanford Water Information (2021)
- City of Hanford Recycling & Green Waste
- Cal Recycle (2022)
- Hanford Emergency Management Plan
- Kings County Airport Land Use Compatibility Plan
- Hanford Municipal Code
- California Building Code Title 24
- Kings County Safety Element

## SECTION 2 - PROJECT DESCRIPTION

### ***2.1 - Introduction***

Silicon Valley Ranch, LLC (the Applicant) proposes to develop approximately 88.9 acres to create a 326-lot residential subdivision and the associated appurtenant infrastructure consistent with the City of Hanford General Plan Designation Low Density Residential and prezone District R-L-5.

### ***2.2 - Project Location***

The Project is located in the Hanford city limits in the City's southwestern portion. south of Hanford Armona Road, in the sphere of influence of the City of Hanford. The project encompasses approximately 88.9 acres (APN 011-040-008, 010, and 027) and is bordered by undeveloped and rural residential lands on the west and south; a church and undeveloped land to the north; and residential uses to the east. Township 19 South, Section 3, Range 21 East MDB&M (see Figure 3-1 and 3-2).

### ***2.3 - Surrounding Land Uses***

The Project is bordered by undeveloped and rural residential lands on the west and south; a church and undeveloped land to the north; and residential uses to the east.

### ***2.4 - Proposed Project***

#### ***PROJECT DESCRIPTION***

The Project proposes to develop a 326-unit residential subdivision within the City of Hanford. An approximately 8-acre portion of the site at the northeast corner of the property is intended to be removed via a lot-line adjustment. The Project is within the City of Hanford's Sphere of Influence but will be annexed into the City.

The Project will be developed with a 326-unit single-family subdivision, a 3.58-acre park, and a 3-acre retention basin. Lots will range between 5,000 to 7,000 square feet and would be developed with single-family residential units. Associated utility and right-of-way infrastructure would also be developed in accordance with City of Hanford standards and regulations.

Approvals include:

- Approval of Tentative Tract Map 943
- Prezoning – Because the project site does not currently have a City of Hanford zoning designation, prezoning of the site is required. The project site would be prezoned to the R-L-5 zone.
- Site Plan Review – The Project will require approval of an SPR

- Annexation into the city limits by Kings County Local Agency Formation Commission (LAFCo)

Development of the Project is anticipated to occur over a 12-month period. Construction equipment will vary over the course of development and would include the following:

- Excavators/earth-moving equipment
- Depending on foundation system, auger rig, or pile-driving rig
- All-terrain forklifts
- A man/material hoist
- Truck cranes and potentially a tower crane (pending permit approval)
- Concrete trucks
- Dump trucks
- Street sweepers/water trucks for dust control
- Construction delivery trucks (typically box trucks or flat beds)
- Small tools (generators, light plants, compactors, air compressors)

As mandated by the California Environmental Quality Act (CEQA), the public review period for this document was 30 days (CEQA Section 15073[b]). The public review period began on June 21, 2024 and ended on July 22, 2024. For further information, please Gabrielle de Silva Myers, 317 N. Douty Street, Hanford, CA 93230, (559) 585-2500.

## SECTION 3 - INITIAL STUDY

### ***3.1 - Environmental Checklist***

**1. Project Title:**

Silicon Valley Ranch Residential Development Project

**2. Lead Agency Name and Address:**

City of Hanford  
317 N. Douty Street  
Hanford, CA 93230

**3. Contact Person and Phone Number:**

Gabrielle de Silva Myers – (559) 585-2578

**4. Project Location:**

The Silicon Valley Ranch Residential Development Project is located south of Hanford Armona Road, in the sphere of influence of the City of Hanford. The project encompasses approximately 88.9 acres (APN 011-040-008, 010, and 027 and is bordered by undeveloped and rural residential lands on the west and south; a church and undeveloped land to the north; and residential uses to the east. Township 19 South, Section 3, Range 21 East MDB&M.

**5. Project Sponsor's Name and Address:**

Marc Frelier  
Silicon Valley Ranch, LLC  
20900 Boyce Lane  
Saratoga, CA 95070

**6. General Plan Designation:**

Existing: City of Hanford – Low Density Residential

**7. Zoning:**

Existing: City of Hanford – Residential Low Density (R-L-5, 5,000 square feet)

**8. Description of Project:**

The Project proposes to develop a 326-unit residential subdivision within the City of Hanford. An approximately 8-acre portion of the site at the northeast corner of the property



is intended to be removed via a lot-line adjustment. The Project is within the City of Hanford's Sphere of Influence, but will be annexed into the City.

The Project will be developed with a 326-unit single-family subdivision, a 3.58-acre park, and a 3-acre retention basin. Lots will range between 5,000 to 7,000 square feet and would be developed with single-family residential units. Associated utility and right-of-way infrastructure would also be developed in accordance with City of Hanford standards and regulations.

Development of the Project is anticipated to occur over a 12-month period. Construction equipment will vary over the course of development and would include the following:

- Excavators / earth moving equipment
- Depending on foundation system, auger rig, or pile-driving rig
- All-terrain forklifts
- A man/material hoist
- Truck cranes and potentially a tower crane (pending permit approval)
- Concrete trucks
- Dump trucks
- Street sweepers/water trucks for dust control
- Construction delivery trucks (typically box trucks or flat beds)
- Small tools (generators, light plants, compactors, air compressors)

#### **9. Surrounding Land Uses and Setting:**

The Project is bordered by undeveloped and rural residential lands on the west and south; a church and undeveloped land to the north; and residential uses to the east.

#### **10. Other Public Agencies Whose Approval is Required:**

- San Joaquin Valley Air Pollution Control District
- Kings County LAFCo

#### **11. Have California Native American tribes traditionally and culturally affiliated with the Project area requested consultation pursuant to Public Resources Code Section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?**

The State requires lead agencies to consider the potential effects of proposed projects and consult with California Native American tribes during the local planning process for the purpose of protecting Traditional Tribal Cultural Resources through the California Environmental Quality Act (CEQA) Guidelines. Pursuant to PRC Section 21080.3.1, the Lead Agency shall begin consultation with the California Native American tribe that is

traditionally and culturally affiliated with the geographical area of the proposed Project. Such significant cultural resources are either sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a tribe which is either on or eligible for inclusion in the California Historic Register or local historic register, or the Lead Agency, at its discretion, and support by substantial evidence, choose to treat the resources as a Tribal Cultural Resources (PRC Section 21074(a)(1-2)). According to the most recent census data, California is home to 109 currently recognized Indian tribes. Tribes in California currently have nearly 100 separate reservations or rancherias. Kings County has a number of tribal groups in the area.

Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See PRC Section 21083.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per PRC Section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that PRC Section 21082.3(c) contains provisions specific to confidentiality.

NOTE: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and Project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code Section 21083.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code Section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code Section 21082.3(c) contains provisions specific to confidentiality.







### ***3.2 - Environmental Factors Potentially Affected***

The environmental factors checked below would be potentially affected by this Project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

- |                                                        |                                                             |                                                                        |
|--------------------------------------------------------|-------------------------------------------------------------|------------------------------------------------------------------------|
| <input type="checkbox"/> Aesthetics                    | <input type="checkbox"/> Agriculture and Forestry Resources | <input type="checkbox"/> Air Quality                                   |
| <input type="checkbox"/> Biological Resources          | <input type="checkbox"/> Cultural Resources                 | <input type="checkbox"/> Energy                                        |
| <input type="checkbox"/> Geology and Soils             | <input type="checkbox"/> Greenhouse Gas Emissions           | <input type="checkbox"/> Hazards and Hazardous Materials               |
| <input type="checkbox"/> Hydrology and Water Quality   | <input checked="" type="checkbox"/> Land Use and Planning   | <input type="checkbox"/> Mineral Resources                             |
| <input type="checkbox"/> Noise                         | <input type="checkbox"/> Population and Housing             | <input type="checkbox"/> Public Services                               |
| <input type="checkbox"/> Recreation                    | <input checked="" type="checkbox"/> Transportation          | <input type="checkbox"/> Tribal Cultural Resources                     |
| <input type="checkbox"/> Utilities and Service Systems | <input type="checkbox"/> Wildfire                           | <input checked="" type="checkbox"/> Mandatory Findings of Significance |

---

**3.3 - Determination**

On the basis of this initial evaluation:

- ☐ I find that the proposed Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- ☐ I find that although the proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- ☒ I find that the proposed Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- ☐ I find that the proposed Project MAY have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect (a) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (b) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENT IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- ☐ I find that although the proposed Project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed Project, nothing further is required.

---

Signature

---

Date

---

Printed Name

---

For

---

### **3.4 - Evaluation of Environmental Impacts**

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a Lead Agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3. Once the Lead Agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.
4. "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less-Than-Significant Impact." The Lead Agency must describe the mitigation measures and briefly explain how they reduce the effect to a less-than-significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).
5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:
  - a. Earlier Analysis Used. Identify and state where they are available for review.
  - b. Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
  - c. Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.



6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.
9. The explanation of each issue should identify:
  - a. The significance criteria or threshold, if any, used to evaluate each question.
  - b. The mitigation measure identified, if any, to reduce the impact to less than significance.

|  | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|

### 3.4.1 - AESTHETICS

Except as provided in Public Resources Code Section 21099, would the Project:

|    |                                                                                                                                                                                                                                                                                                                                                                          |                          |                          |                                     |                                     |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| a. | Have a substantial adverse effect on a scenic vista?                                                                                                                                                                                                                                                                                                                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| b. | Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?                                                                                                                                                                                                                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| c. | In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point.) If the Project is in an urbanized area, would the Project conflict with applicable zoning and other regulations governing scenic quality? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| d. | Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?                                                                                                                                                                                                                                                        | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |

### Discussion

#### Impact #3.4.1a – Would the Project have a substantial adverse effect on a scenic vista?

A scenic vista is an area identified or known for high scenic quality. Scenic vistas may be designated by a federal, State, or local agency and may also include an area that is designated, signed, and accessible to the public for the express purposes of viewing and sightseeing. The City of Hanford does not designate any scenic vistas within its jurisdiction. There are very few scenic vistas within the Central Valley. The Coastal Range Mountains and the Sierra Nevada can be considered scenic vistas. The proposed Project is located approximately 40 miles from the Coastal Range and approximately 45 miles from the Sierra Nevada. Since there are no scenic vistas in the immediate proximity of the proposed Project site, there would be no impacts related to a scenic vista. Since there are no scenic vistas in the immediate proximity of the proposed Project site, there would be no impacts related to a scenic vista. Therefore, no impacts are anticipated, and no further analysis in the EIR is warranted.

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**Impact #3.4.1b - Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?**

The proposed Project is not in the vicinity of a scenic highway as identified by the City of Hanford or Caltrans. The closest eligible scenic highway is a portion of SR 198 that runs from SR 99 east through Visalia (California Department of Transportation, 2022). This portion of SR 198 is approximately 15 miles east of the Project site. The site is flat with little topography and no trees or rock outcroppings. There would be no impacts related to these types of scenic resources.

Downtown Hanford is identified as the historic center of the City (City of Hanford, 2017). Three buildings are listed on the National Registry of Historic Places and the State Register of Historic Places. The Kings County Courthouse, the Carnegie Library, and the Taoist Temple are located more than two miles to the northeast. Therefore, the Project would not have an impact on any of these historic buildings. There will be no impact, and no further analysis in the EIR is warranted.

**Impact #3.4.1c - Would the Project in non-urbanized areas substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point.) If the Project is in an urbanized area, would the Project conflict with applicable zoning and other regulations governing scenic quality?**

The Project is within an area that is becoming more urbanized with the spread of residential development as the City grows. The surrounding area consists of agricultural land and rural residential homes, and an existing subdivision easterly adjacent to the Project site. Additionally, a recently approved 97-lot residential subdivision will be located westerly adjacent to the Project site. The General Plan identifies the parcels to the north of the Project site as Medium Density Residential and all other abutting properties as Low Density Residential. The designations indicate that the City intends future development in this area. The westward expansion of residential homes from 12th Avenue provides a template for the future of the area to be completely urbanized.

Several sections of the Hanford Municipal Code regulate physical development by controlling the appearance of new development and the placement of new development with consideration for surrounding uses. The Project development will comply with the General Plan, as the Project area is proposed to be rezoned R-L-5- Low Density Residential.

There are no scenic vistas within the surrounding area and existing urban areas near the Project site; therefore, the proposed Project will not substantially degrade the existing characteristics of the area. Therefore, impacts from the Project are considered to be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.1d - Except as provided in Public Resources Code Section 21099, would the Project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?**

Construction of the proposed Project would generally occur during daytime hours, typically from 7:00 a.m. to 8:00 p.m. All lighting, if needed, would be directed downward and shielded to focus illumination on the desired work areas and prevent light spillage onto adjacent properties. As required by GP 9.10.060 A.10, the lighting used to illuminate work areas would be shielded, focused downward, and turned off by 8:00 p.m.; therefore, the potential for lighting to affect any residents adversely is minimal. Increased truck traffic and the transport of construction materials to the Project site would temporarily increase glare conditions during construction. However, this increase in glare would be minimal. Construction activity would focus on specific areas on the sites, and any sources of glare would not be stationary for a prolonged period. Therefore, the proposed Project's construction would not create a new source of substantial glare that would affect daytime views in the area.

Operational impacts would be limited to residential lighting, including homes and streetlights. The Project's exterior streetlights and residential lighting will be designed to minimize reflective glare and light scatter. The Project will comply with the applicable provisions of the Hanford Municipal Code Development Standards, such as Section 17.50.140 – Outdoor Lighting Standards (City of Hanford, 2022). Additionally, the California Building Code Title 24 contains standards for outdoor lighting that are intended to reduce light pollution and glare by regulating light power and brightness, shielding, and sensor controls. These requirements would substantially reduce potential nuisances from light or glare. Therefore, impacts resulting from the Project are considered to be less than significant, and no further analysis in the EIR is warranted.

| Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|
|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|

### 3.4.2 - AGRICULTURE AND FORESTRY RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the Project:

|                                                                                                                                                                                                                                                                                            |                          |                          |                                     |                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?                                             | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| b. Conflict with existing zoning for agricultural use or a Williamson Act contract?                                                                                                                                                                                                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220[g]), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104[g])? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| d. Result in the loss of forest land or conversion of forest land to non-forest use?                                                                                                                                                                                                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?                                                                               | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |

### Discussion

**Impact #3.4.2a – Would the Project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?**

CEQA uses the California Department of Conservation Division of Land Resource Protection's Farmland Mapping Project (FMMP) categories of "Prime Farmland," "Farmland of Statewide Importance," and "Unique Farmland" to define "agricultural land" for the purposes of assessing environmental impacts (PRC Section 21060.1(a)) related to the conversion of these farmlands to non-agricultural uses. According to the California Department of Conservation Important Farmland Finder, the Project site is designated as being Prime Farmland and Farmland of Statewide Importance (California Department of Conservation, 2023).

Prime Farmland is irrigated land with the best combination of physical and chemical features able to sustain long-term production of agricultural crops. Farmland of Statewide Importance is irrigated land similar to Prime Farmland that has a good combination of physical and chemical characteristics for the production of agricultural crops with minor shortcomings, such as greater slopes or less ability to store soil moisture. Historical aerial images of the Project site indicate that the site has been utilized for agricultural operations.

Although the FMMP designates the Project property as Prime Farmland and Farmland of Statewide Importance, the General Plan identifies the Project parcel as within the Planned Area Boundary, is designated Low Density Residential. The parcels to the north are designated as Medium Density Residential and all other abutting properties as Low Density Residential. The designations indicate that the City anticipates future non-agricultural development in this area. Chapter 5.2 of the City of Hanford General Plan contains several goals and policies for agricultural resources. Goal 1 strives for the conservation and long-term protection of agricultural resources and soils located outside of the Planned Area Boundary. Policy 4 under Goal 1 states "retain existing agricultural areas as an interim use inside the Planned Area Boundary and support agricultural operations until such time that the areas are needed for logical urban expansion.

Although the Project proposes to convert Prime Farmland and Farmland of Statewide Importance, the subject parcels and surrounding area have been planned for development with General Plan goals and policies for the City of Hanford supporting logical development within its adopted Planned Area Boundary. A Statement of Overriding Consideration was made for the significant impact of General Plan Buildout on Agricultural Resources. Therefore, although development of the Project site would result in the conversion of Farmland to non-agricultural use, this conversion would result in a less than significant impact, as it is consistent with the General Plan. Pursuant to Section 16.40.110 of the City of Hanford Municipal Code, the applicant will be required to record an acknowledgement of the Right-to-Farm notice. Therefore, in consideration of the Project's small conversion of agricultural land to a non-agricultural use and the current land use designation of residential development, impacts resulting from this conversion would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.2b – Would the Project conflict with existing zoning for agricultural use or a Williamson Act contract?**

The Project area is zoned Low Density Residential by the City of Hanford Zoning Ordinance and is anticipated to have a non-agricultural land use. Additionally, the Project site is not subject to a Williamson Act Land Use contract. Therefore, there is no impact, and no further analysis in the EIR is warranted.

**Impact #3.4.2c – Would the Project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?**

Pursuant to Public Resources Code Section 4526, “Timberland” means land, other than land owned by the federal government and land designated by the board as experimental forest land, which is available for, and capable of, growing a crop of trees of a commercial species used to produce lumber and other forest products, including Christmas trees. Pursuant to Public Resources Code Section 51104, Timberland zoned Timberland Production means privately owned land or land acquired for State Forest purposes, which is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses, and which is capable of growing an average annual volume of wood fiber of at least 15 cubic feet per acre. The Project site does not have any forest land or timberland resources, nor is it zoned for timber production. Therefore, the Project will have no impact, and no further analysis in the EIR is warranted.

**Impact #3.4.2d – Would the Project result in the loss of forest land or conversion of forest land to non-forest use?**

See Impacts #3.4.2a-c. There will be no impact on forest land, and no further analysis in the EIR is warranted.

**Impact #3.4.2e – Would the Project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?**

The General Plan designates the Project site as Low Density Residential and rezoning for the R-L-5 Zone District is consistent with the designation. The parcels to the north are designated as Medium Density Residential and all other abutting properties as Low Density Residential. The designations indicate that the City anticipates future non-agricultural development in this area. Chapter 5.2 of the City of Hanford General Plan contains several goals and policies for agricultural resources. Goal 1 strives for the conservation and long-term protection of agricultural resources and soils located outside of the Planned Area Boundary. Policy 4 under Goal 1 states “retain existing agricultural areas as an interim use inside the Planned Area Boundary and support agricultural operations until such time that the areas are needed for logical urban expansion. The eventual conversion and development of the Project and surrounding parcels would occur as they are located within the Planned Area Boundary of the City of Hanford. Although the Project would not directly convert surrounding Farmland to non-agricultural uses, as discussed, the Project site and surrounding area are designated for non-agricultural development at some point in time.



Therefore, the Project's conversion of Farmland is considered less than significant with consideration of the City General Plan's goals and policies for agricultural land within the Planned Area Boundary. As such, no further analysis in the EIR is warranted.

|  | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|

### 3.4.3 - AIR QUALITY

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the Project:

|    |                                                                                                                                                                                                |                          |                          |                                     |                          |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| a. | Conflict with or obstruct implementation of the applicable air quality plan?                                                                                                                   | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b. | Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or State ambient air quality standard? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c. | Expose sensitive receptors to substantial pollutant concentrations?                                                                                                                            | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d. | Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?                                                                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

This section is based on an Air Quality Impact Analysis (AQIA) prepared for the Project (Trinity Consultants, 2023). The AQIA analysis of the Project was calculated using a higher residential lot count than what is currently proposed. Therefore, it can be presumed that air quality estimates resulting from the Project would be less than those estimates in the AQIA and discussed in this NOP. The study is included as Appendix A of this document.

### Discussion

The Project is located within the San Joaquin Valley Air Basin (SJVAB) in Kings County and is included among the eight counties that comprise the San Joaquin Valley Air Pollution Control District (SJVAPCD or District). The SJVAPCD acts as the regulatory agency for air pollution control in the basin and is the local agency empowered to regulate air pollutant emissions for the plan area. Protection of the public health is maintained through the attainment and maintenance of ambient air quality standards for various atmospheric compounds and the enforcement of emissions limits for individual stationary sources. The Federal Clean Air Act requires that the U.S. Environmental Protection Agency establish National Ambient Air Quality Standards (NAAQS) to protect the health, safety, and welfare of the public. California has also adopted ambient air quality standards (CAAQS) for criteria pollutants. CAAQA are more stringent than the corresponding NAAQS.

Table 3.4.3-1 provides the NAAQS and CAAQS criteria pollutant thresholds of significance. The Project would include compliance with the SJVAPCD's Regulation VIII (Fugitive PM<sub>10</sub> Prohibitions), Rule 2010 (Permits Required), Rule 2201 (New and Modified Stationary Source Review), Rule 4002 (National Emissions Standards for Hazardous Air Pollutants), Rule 4102 (Nuisance), and Rule 4641 (Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations), and other applicable regulations.

**Table 3.4.3-1  
Federal and California Air Quality Standards**

| Pollutant                                    | Averaging Time              | Concentration                                   |                                    |
|----------------------------------------------|-----------------------------|-------------------------------------------------|------------------------------------|
|                                              |                             | NAAQS                                           | CAAQS                              |
| O <sub>3</sub>                               | 8-hour                      | 0.070 ppm (137 µg/m <sup>3</sup> ) <sup>a</sup> | 0.070 ppm (137 µg/m <sup>3</sup> ) |
|                                              | 1-hour                      | -                                               | 0.09 ppm (180 µg/m <sup>3</sup> )  |
| CO                                           | 8-hour                      | 9 ppm (10 µg/m <sup>3</sup> )                   | 9 ppm (10 µg/m <sup>3</sup> )      |
|                                              | 1-hour                      | 35 ppm (40 µg/m <sup>3</sup> )                  | 20 ppm (23 µg/m <sup>3</sup> )     |
| NO <sub>2</sub>                              | Annual Average              | 53 ppb (100 µg/m <sup>3</sup> )                 | 0.030 ppm (57 µg/m <sup>3</sup> )  |
|                                              | 1-hour                      | 100 ppb (188.68 µg/m <sup>3</sup> )             | 0.18 ppm (339 µg/m <sup>3</sup> )  |
| SO <sub>2</sub>                              | 3-hour                      | 0.5 ppm (1,300 µg/m <sup>3</sup> )              | -                                  |
|                                              | 24 hour                     | 0.14 ppm (365 µg/m <sup>3</sup> )               | 0.04 ppm (105 µg/m <sup>3</sup> )  |
|                                              | 1-hour                      | 75 ppb (196 µg/m <sup>3</sup> )                 | 0.25 ppm (655 µg/m <sup>3</sup> )  |
| Particulate Matter (PM <sub>10</sub> )       | Annual Arithmetic Mean      | -                                               | 20 µg/m <sup>3</sup>               |
|                                              | 24-hour                     | 150 µg/m <sup>3</sup>                           | 50 µg/m <sup>3</sup>               |
| Fine Particulate Matter (PM <sub>2.5</sub> ) | Annual Arithmetic Mean      | 12 µg/m <sup>3</sup>                            | 12 µg/m <sup>3</sup>               |
|                                              | 24-hour                     | 35 µg/m <sup>3</sup>                            | -                                  |
| Sulfates                                     | 24-hour                     | -                                               | 25 µg/m <sup>3</sup>               |
| PB <sub>d</sub>                              | Rolling Three-Month Average | 0.15 µg/m <sup>3</sup>                          | -                                  |
|                                              | 30 Day Average              | -                                               | 1.5 µg/m <sup>3</sup>              |
| H <sub>2</sub> S                             | 1-hour                      | -                                               | 0.03 ppm (42 µg/m <sup>3</sup> )   |
| Vinyl Chloride (chloroethene)                | 24-hour                     | -                                               | 0.010 ppm (26 µg/m <sup>3</sup> )  |
| Visibility Reducing particles                | 8-hour (1000 to 1800 PST)   | -                                               | b                                  |

a. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

b. In 1989, CARB converted both the general statewide 10-mile visibility standards and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

Source: (Trinity Consultants, 2023)

**Impact #3.4.3a – Would the Project conflict with or obstruct implementation of the applicable air quality plan?**

The Project is located within the San Joaquin Valley Air Basin (SJVAB), which is under the San Joaquin Valley Air Pollution Control District (SJVAPCD or Air District). The SJVAB is designated non-attainment of State and federal health-based air quality standards for ozone and particulate matter less than 2.5 microns (PM<sub>2.5</sub>). The SJVAB is designated attainment for federal particulate matter less than 10 microns (PM<sub>10</sub>) standards and non-attainment of the State PM<sub>10</sub> threshold. To meet federal Clean Air Act (CAA) requirements, the SJVAPCD has multiple air quality attainment plan (AQAP) documents, including:

- 2008 Extreme Ozone Attainment Demonstration Plan (EOADP) for attainment of the 1-hour ozone standard.
- 2007 Ozone Plan for attainment of the 8-hour ozone standard.
- 2007 PM<sub>10</sub> Maintenance Plan and Request for Redesignation.
- 2008 PM<sub>2.5</sub> Plan.

Because of the region's federal non-attainment status for ozone and PM<sub>2.5</sub>, and State non-attainment status for ozone, PM<sub>2.5</sub>, and PM<sub>10</sub>, if the Project-generated emissions of either the ozone precursor pollutants (reactive organic gases [ROG] or oxides of nitrogen [NO<sub>x</sub>]), PM<sub>10</sub>, or PM<sub>2.5</sub> were to exceed the SJVAPCD's significance thresholds, then the Project uses would be considered to conflict with the attainment plans. In addition, if the Project uses were to result in a change in land use, and corresponding increases in vehicle miles traveled, they may result in an increase in vehicle miles traveled that is unaccounted for in regional emissions inventories contained in regional air quality control plans.

The Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI) states that the SJVAPCD's established thresholds of significance for criteria pollutant emissions require offsets for stationary sources. "Emission reductions achieved through implementation of District offset requirements are a major component of the District's air quality plans. Thus, projects with emissions below the thresholds of significance for criteria pollutants would be determined to 'Not conflict or obstruct implementation of the District's air quality plan' (SJVAPCD, 2015).

As discussed in Impact #3.4.3b, below, predicted construction and operational emissions would not exceed the SJVAPCD's significance thresholds for ROG, NO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub>. As a result, the Project would not conflict with emissions inventories contained in regional AQAPs. It would not result in a significant contribution to the region's air quality non-attainment status.

The SJVAB is designated non-attainment of State and federal health-based air quality standards for ozone and PM<sub>2.5</sub>. The SJVAB is designated non-attainment of State PM<sub>10</sub>. To meet Federal Clean Air Act (CAA) requirements, the SJVAPCD has multiple air quality attainment plan (AQAP) documents, including:

- 2016 Ozone Plan.
- 2007 PM<sub>10</sub> Maintenance Plan and Request for Redesignation.
- 2016 PM<sub>2.5</sub> Plan.

Air quality impacts from proposed projects within Kings County are controlled through policies and provisions of the SJVAPCD and the 2035 City of Hanford General Plan (City of Hanford, 2017). To demonstrate that a proposed project would not cause further air quality degradation in either of the SJVAPCD's plans to improve air quality within the air basin or federal requirements to meet certain air quality compliance goals, each project should also demonstrate consistency with the SJVAPCD's adopted Air Quality Attainment Plans (AQAP) for O<sub>3</sub> and PM<sub>10</sub>. The California Clean Air Act (CCAA) requires air pollution control districts with severe or extreme air quality problems to provide for a five percent reduction in non-attainment emissions per year.

The Kings County Association of Governments (KCAG) Air Quality Conformity Analysis demonstrates that the 2019 Federal Transportation Improvement Program (2019 FTIP) and 2022 Regional Transportation Plan (2022 RTP) in Kings County would not hinder the efforts set out in the CARB's SIP for each area's non-attainment pollutants (CO, O<sub>3</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub>).

The CCAA and AQAP identify transportation control measures as methods to further reduce emissions from mobile sources. Strategies identified to reduce vehicular emissions, such as reductions in vehicle trips, vehicle use, vehicle miles traveled, vehicle idling, and traffic congestion, to reduce vehicular emissions, can be implemented as control measures under the CCAA as well. The proposed Project is not anticipated to exceed SJVAPCD thresholds for criteria pollutants during construction or operations, and impacts are considered less than significant.

No employment or population growth is anticipated as a result of the Project that would conflict with the provisions of the AQAP; conclusions may be drawn from the following criteria:

The findings of the analysis show that the Project's lack of permanent employee increases does not contribute to any unplanned growth in the area. By definition, the proposed emissions from the Project are below the SJVAPCD's established emissions impact thresholds.

Based on the above analysis presented, the Project is anticipated to be consistent with the AQAP, RTP, and KCAG Air Quality Conformity Analysis. As such, impacts would be less than significant.

The Project will not conflict with the San Joaquin Valley Air Pollution Control District Air Quality Plan. Compliance with Air Districts Air Quality Plan is a requirement of development within the City. Additionally, the developer will be required to obtain any necessary permits through the SJVAPCD. Therefore, the Project is consistent with the growth assumptions used in the applicable AQPs. As a result, the Project will not conflict with or obstruct the implementation of any air quality plans. Therefore, no mitigation is needed. The impacts of the Project would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.3b – Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or State ambient air quality standard?**

The SJVAPCD GAMAQI adopted in 2015 contains thresholds for CO, NO<sub>x</sub>, ROG, SO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub>. Reduction of these pollutants during any future development construction activities as a result of the approved Project will be required.

Ozone is a secondary pollutant that can be formed miles from the source of emissions through reactions of ROG and NO<sub>x</sub> emissions in the presence of sunlight. Therefore, ROG and NO<sub>x</sub> are termed, ozone precursors. The Air Basin often exceeds the State and national ozone standards. Therefore, if the Project emits a substantial quantity of ozone precursors, the Project may contribute to an exceedance of the ozone standard. The Air Basin also exceeds air quality standards for PM<sub>10</sub> and PM<sub>2.5</sub>; therefore, substantial Project emissions may contribute to an exceedance of these pollutants. The District's annual emission significance thresholds used for the Project define the substantial contribution of both operational and construction emissions and are depicted in Tables 3.4.3-2 and 3.4.3-3, below.

***Short-Term Impacts***

As a result of the Project, short-term emissions would result from the construction phase of the proposed Project. Construction is anticipated to have an approximate 12-month total construction window. The main source of short-term emissions would be the exhaust from construction vehicles and equipment; however, these emissions would be temporary and are not expected to result in the exceedance of any applicable thresholds or regulations. SJVAPCD's required measures for all projects were applied and include watering exposed areas three times per day and reducing vehicle speeds to less than 15 miles per hour. As shown in Table 3.4.3-2, the Project's emissions during temporary construction activities would not exceed thresholds. Therefore, construction emissions were found to be less than significant.

**Table 3.4.3-2  
Short-Term Project Emissions**

| Emissions Source                        | ROG  | NOx  | Pollutant |      | PM <sub>10</sub> | PM <sub>2.5</sub> |
|-----------------------------------------|------|------|-----------|------|------------------|-------------------|
|                                         |      |      | CO        | SOx  |                  |                   |
| (tons/year)                             |      |      |           |      |                  |                   |
| Unmitigated                             |      |      |           |      |                  |                   |
| 2023 Construction Emissions             | 0.18 | 1.51 | 1.66      | 0.00 | 0.59             | 0.19              |
| 2024 Construction Emissions             | 2.02 | 0.73 | 0.97      | 0.00 | 0.10             | 0.05              |
| Mitigated                               |      |      |           |      |                  |                   |
| 2023 Construction Emissions             | 0.18 | 1.51 | 1.66      | 0.00 | 0.33             | 0.13              |
| 2024 Construction Emissions             | 2.02 | 0.73 | 0.97      | 0.00 | 0.10             | 0.05              |
| Significance Threshold                  | 10   | 10   | 100       | 27   | 15               | 15                |
| Is Threshold Exceeded after Mitigation? | No   | No   | No        | No   | No               | No                |

Source: (Trinity Consultants, 2023)

### Long-Term Impacts

Long-term operational emissions are generally caused by operational mobile, area, and energy sources. Operation of the Project would also create additional criteria pollutants, particularly as a result of increased mobile emissions in the Project area. However, these emissions would not exceed thresholds, as shown in Table 3.4.3-3.

**Table 3.4.3-3  
Project Operational Emissions**

| Emissions Source                               | Pollutant   |             |              |             |                  |                   |
|------------------------------------------------|-------------|-------------|--------------|-------------|------------------|-------------------|
|                                                | ROG         | NOx         | CO           | SOx         | PM <sub>10</sub> | PM <sub>2.5</sub> |
| (tons/year)                                    |             |             |              |             |                  |                   |
| <b>Unmitigated Operational Emissions</b>       |             |             |              |             |                  |                   |
| Area Emissions                                 | 3.07        | 0.16        | 2.59         | 0.00        | 0.02             | 0.02              |
| Energy Emissions                               | 0.04        | 0.38        | 0.16         | 0.00        | 0.03             | 0.03              |
| Mobile Emissions                               | 0.94        | 1.79        | 11.37        | 0.03        | 3.44             | 0.93              |
| <b>Total</b>                                   | <b>4.06</b> | <b>2.33</b> | <b>14.12</b> | <b>0.04</b> | <b>3.50</b>      | <b>0.99</b>       |
| <b>Mitigated Operational Emissions</b>         |             |             |              |             |                  |                   |
| Mobile Emissions                               | 3.06        | 0.03        | 2.52         | 0.00        | 0.01             | 0.01              |
| Area Emissions                                 | 0.04        | 0.38        | 0.16         | 0.00        | 0.03             | 0.03              |
| Energy Emissions                               | 0.93        | 1.66        | 10.53        | 0.03        | 3.10             | 0.84              |
| <b>Total</b>                                   | <b>4.03</b> | <b>2.07</b> | <b>13.21</b> | <b>0.03</b> | <b>3.14</b>      | <b>0.88</b>       |
| <b>SJVAPCD Threshold</b>                       | <b>10</b>   | <b>10</b>   | <b>100</b>   | <b>27</b>   | <b>15</b>        | <b>15</b>         |
| <b>Is Threshold Exceeded After Mitigation?</b> | <b>No</b>   | <b>No</b>   | <b>No</b>    | <b>No</b>   | <b>No</b>        | <b>No</b>         |

Source: (Trinity Consultants, 2023)

Operation of the site at full build-out is not expected to present a substantial source of fugitive dust (PM<sub>10</sub>). The Project will comply with SJVAPCD's Regulation VIII and establishes required controls to reduce and minimize fugitive dust emissions as required under Policy AQ 4.7. Additionally, under the City of Hanford Air Quality Element, the following SJVPACD Rules and Regulations applies to all projects and includes the proposed Project as recommended in the City of Hanford Air Quality including, but not limited to Policy AQ 4.1, 4.5 4.6, and 4.7 and Program AQ 4.4:

- Rule 4102 – Nuisance – prohibits a facility from posing as a nuisance to surrounding receptors and can impose penalties for nuisance issues such as dust, smoke, excess emissions, etc. Compliance with this rule ensures that the area around the Project site will not be adversely impacted by such issues.
- Regulation VIII – Fugitive PM<sub>10</sub> Prohibitions – A series of regulations to reduce and/or eliminate generation of particulate matter (PM) that can adversely impact visibility as well as the health and safety of people on-site or in the vicinity of the Project.



- Rule 8011 – General Requirements – This rule is to reduce ambient concentrations of fine particulate matter by requiring actions to prevent, reduce or mitigate anthropogenic (human-caused) fugitive dust emissions.
- Rule 8021 – Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities – Restricts generation of airborne dust and visibility impacts from these activities. Places limits on opacity and equipment operation under certain adverse weather conditions.
- Rule 8041 – Carryout and Trackout – Require that equipment and vehicles leaving the construction site control the amount of dirt, soil or mud that is tracked offsite and onto public roadways. This helps eliminate or minimize dust generation and opacity degradation.
- Rule 8051 – Open Areas – Limits fugitive dust from open areas, i.e., areas on a construction site that are not actively being constructed upon but may generate wind-blown dust.

In addition to SJVAPCD Rules and Regulations, regulatory compliance with Title 24 of the Uniform Building Code for energy consumption would reduce criteria pollutant generation. The long-term operational emissions associated with the proposed Project would be less than SJVAPCD significance threshold levels and would, therefore, not significantly impact criteria air pollutants.

The Project-specific long-term emissions of criteria pollutants are not expected to exceed the following District significance thresholds. Therefore, it is concluded that the Project would have a less-than-significant impact on air quality.

#### **Impact #3.4.3c – Would the Project expose sensitive receptors to substantial pollutant concentrations?**

Sensitive receptors are defined as areas where young children, chronically ill individuals, the elderly, or people who are more sensitive than the general population reside. The following locations are where several sensitive receptors are likely to reside and be affected by substantial pollutant concentrations: schools, hospitals, nursing homes, and daycare centers. There are 16 known non-residential sensitive receptors within two miles of the Project site (Trinity Consultants, 2023). The closest schools are Future Hope Preschool approximately 0.1 miles north, and Martin Luther King Elementary School, approximately 1.3 miles to the east. The closest daycare facility is the Manitas de Amor Daycare and Childcare Center, approximately 0.98 miles east of the Project site. The closest healthcare facility is Chester Care Home approximately 0.16 miles to the east.

As noted in Tables 3.4.3-2 and 3.4.3-3 above, the results of the analysis show that emissions generated from temporary construction and long-term operational activities, are well below the SJVAPCD emission thresholds and are not expected to affect sensitive receptors. It is not expected to have any adverse impacts on any known sensitive receptors.

Because of its residential nature, once constructed the proposed Project, is not expected to result in the generation of odors or other hazardous air pollutants. During the construction of the Project, activities and equipment may generate emissions from construction equipment exhaust. However, construction will be completed over a period of 12 months and will not create substantial pollutant concentrations. These impacts are localized and temporary and therefore are considered less than significant. As discussed below, the Project would not expose sensitive receptors to substantial concentrations of localized PM<sub>10</sub>, CO, diesel particulate matter, hazardous air pollutants, or naturally occurring asbestos.

### ***Hazardous Pollutants or Odors***

The GAMAQI guidelines introduce two types of projects that should be assessed when considering hazardous air pollutants (HAPs) that includes: (1) placing a toxic land use in an area where it may have an adverse health impact on existing sensitive land use and (2) placing a sensitive land use in an area where an adverse health impact may occur from existing toxic land use. Some examples of projects that may include HAPs are:

- Agricultural products processing.
- Bulk material handling.
- Chemical blending, mixing, manufacturing, storage, etc.
- Combustion equipment (boilers, engines, heaters, incinerators, etc.).
- Metals etching, melting, plating, refining, etc.
- Plastics & fiberglass forming and manufacturing.
- Petroleum production, manufacturing, storage, and distribution.
- Rock & mineral mining and processing.

The proposed Project is located on a site that is currently undeveloped land. The proposed Project consists of constructing 326 single-family homes. Some odors could result from vehicles and equipment using diesel fuels during the construction period. However, vehicles and equipment using diesel fuels at the proposed Project would comply with the California Air Resources Board (CARB) guidelines, limiting idling time to five minutes with the Airborne Toxic Control Measure (ATCM) (California Code of Regulations Title 13, Section 2485). All construction would be temporary.

The SJVAPC has set the level of significance for carcinogenic risk at 20 in one million, which is understood as the possibility of causing twenty additional cancer cases in a population of one million people. The level of significance for chronic and acute non-cancer risk is a hazard index of 1.0. Modeling of the potential health risks associated with HAPs were determined to be at 4.18E-06 (0.00000418) for maximum predicted cancer risk and 4.70E-03 (0.00470) for the maximum chronic non-cancer hazard index (Trinity Consultants, 2023). As concluded in the AQIA, the Project would not have any adverse effect on the surrounding community. Residential neighborhoods are not known to be a source of substantial pollutant concentrations. Therefore, the Project is not expected to expose sensitive receptors to substantial pollutant concentrations. Construction impacts will be temporary and will not produce substantial pollutant concentrations. Once development has been completed,

everyday residential emissions are foreseen to have less-than-significant pollutant concentrations. Based on the analysis presented, impacts are anticipated to be less than significant with implementation of the Project. However, further analysis is not warranted in the EIR.

**Impact #3.4.3d – Would the Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?**

As discussed in Impact #3.4.3c above, the residential nature of this Project is not expected to result in the generation of odors or hazardous air pollutants that would affect a substantial number of people. The emissions associated with the construction of the Project would be temporary and are not anticipated to result in the generation of a substantial amount of hazardous air pollutants. Therefore, the Project will have a less-than-significant impact. Long-term potential odors in the area would be limited to vehicular and lawn equipment emissions once the Project site is operational. Therefore, the Project will have a less-than-significant impact, and no further analysis in the EIR is warranted.

|                                                                                                                                                                                                                                                                                                                     | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact                        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|----------------------------------------------------------------|-------------------------------------|-------------------------------------|
| <b>3.4.4 - BIOLOGICAL RESOURCES</b>                                                                                                                                                                                                                                                                                 |                                      |                                                                |                                     |                                     |
| Would the Project:                                                                                                                                                                                                                                                                                                  |                                      |                                                                |                                     |                                     |
| a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service? | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?                                                             | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?                                                                                        | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?                                                                                 | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?                                                                                                                                                                                 | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| f. Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan?                                                                                                                                | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

The impact analysis in this section is based on a Biological Resource Evaluation (BRE) prepared for the Project (QK, 2023a), included in Appendix B.

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## Discussion

**Impact #3.4.4a – Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?**

A reconnaissance survey of the Project site and a 50-foot buffer (also called the Biological Survey Area, or BSA) was conducted on January 17, 2023. The survey consisted of walking meandering pedestrian transects spaced 50 to 100 feet apart on the Project site and BSA, where feasible. Areas with suitable habitat that could not be accessed were surveyed using high-power binoculars.

Tasks completed during the survey included determining and documenting current land use, developing an inventory of plant species, wildlife species, and wildlife sign (e.g., scat, burrows, nests, feathers, tracks, etc.), characterizing vegetation associations and habitat conditions within the BSA, assessing the potential for federally, State-listed and other special-status plant and wildlife species that may occur on and near the Project site based on existing conditions, and assessing the potential for migratory birds and raptors to nest on and near the Project site. In addition, all historical wetland and water features documented by NWI and NHD were field verified. All spatial data were recorded using Environmental Systems Research Institute (ESRI) Collector for ArcGIS software installed on an iPad. Site conditions were documented with representative photographs.

No natural plant communities occur within the BSA. The Project site is actively used for agricultural purposes and the surrounding BSA is utilized as either pastureland, residential, or agriculture. Patches of ruderal vegetation occur along the edges of the wheat field and include non-native species such as fiddleneck (*Amsinckia* sp.), crabgrass (*Digitaria sanguinalis*), red-stemmed filaree (*Erodium cicutarium*), and cheeseweed mallow (*Malva parviflora*). The surrounding private residences and associated softscape support a variety of ornamental plants including crimson bottlebrush (*Callistemon citrinus*) and deergrass (*Muhlenbergia rigens*).

During the survey, one inactive passerine nest was identified within an ornamental tree located in the northeast corner of the BSA, approximately 15 feet from the Project boundary. The nest was likely constructed recently given recent rain events in the area and may become active in the near future. A female, white-crowned sparrow (*Zonotrichia leucophrys*) was observed perched in the adjacent tree. No additional nests were observed within the BSA, but the ornamental trees located on nearby residential properties could support nesting birds during nesting season (February 1 to September 15). Additionally, a small grove of eucalyptus trees along the southern terminus of the BSA has the potential to support larger nests including raptor nests, though there were none observed during the survey. Common migratory bird species observed during the survey included white-crowned sparrow, common raven (*Corvus corax*), and American crow (*Corvus brachyrhynchos*).

Small mammal burrows were observed within the northwestern corner of the BSA. These burrows were determined to be occupied by California ground squirrel (*Otospermophilus beecheyi*) based on their size, configuration, and the presence of ground squirrel scat near the entrances. Evidence of past pocket gopher (*Thomomys bottae*) activity, including clusters of weathered vertical entranced burrows, was observed along the southwestern corner of the BSA between the wheat field and adjacent pasture. These burrows were weathered, and most were collapsed with a visible terminus.

A retention basin was observed adjacent to the southeastern boundary of the BSA, approximately 15 feet from the BSA and 75 feet from the Project site boundary. The basin contained shallow standing water at the time of the survey, likely due to recent rain events. The banks of the basin supported predominantly upland species including non-native grasses. The bed of the basin contained dead and matted hydrophytic vegetation such as cattails (*Typha sp.*), as well as several young cottonwood trees (*Populus sp.*).

### Special-Status Plants

There were 11 special-status plant species identified in the literature and database review that are known or have the potential to occur within the nine-quadrangle queries centered on the Project site (Table 3.4.4-1). There are no historical records from the CNDDDB of special-status plant species within the BSA.

**Table 3.4.4-4**  
**Special-Status Plant Species Occurring in the Region of the BSA**

| Scientific Name                                    | Common Name             | Status |
|----------------------------------------------------|-------------------------|--------|
| <i>Atriplex cordulata</i> var. <i>cordulata</i>    | heartscale              | 1B.2   |
| <i>Atriplex cordulata</i> var. <i>erecticaulis</i> | Earlimart orache        | 1B.2   |
| <i>Atriplex depressa</i>                           | brittlescale            | 1B.2   |
| <i>Atriplex minuscula</i>                          | lesser saltscale        | 1B.1   |
| <i>Atriplex subtilis</i>                           | subtle orache           | 1B.2   |
| <i>Delphinium recurvatum</i>                       | recurved larkspur       | 1B.2   |
| <i>Lasthenia chrysantha</i>                        | alkali-sink goldfields  | 1B.1   |
| <i>Lepidium jaredii</i> ssp. <i>album</i>          | Panoche peppergrass     | 1B.2   |
| <i>Nama stenocarpa</i>                             | mud nama                | 2B.2   |
| <i>Puccinellia simplex</i>                         | California alkali grass | 1B.2   |
| <i>Sagittaria sanfordii</i>                        | Sanford's arrowhead     | 1B.2   |

CRPR (California Rare Plant Rank):

1A Presumed Extinct in California

1B Rare, Threatened, or Endangered in California and elsewhere

2A Plants presumed extirpated in California, but more common elsewhere

2B Plants Rare, Threatened, or Endangered in California, but more common elsewhere

CRPR Threat Code Extension:

.1 Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)

.2 Fairly endangered in California (20-80% occurrences threatened)

.3 Not very endangered in California (<20% of occurrences threatened).

Source: (QK, 2023a)

No special-status plant species were observed within the BSA. The surveys did not coincide with the optimal blooming periods, however, none of the species identified in the database queries are expected to occur on-site due to the lack of suitable habitat conditions (active agriculture) and/or because the BSA is located outside of the species' known range. The Project site is degraded from historical land use, mainly for agricultural operations, and the adjacent lands have been equally disturbed by agricultural and residential uses.

### **Special-Status Wildlife**

There were 22 special-status wildlife species identified in the literature and database review that are known or have the potential to occur within the nine-quadrangle search area centered on the Project site (Table 3.4.4-2).

**Table 3.4.4-2**  
**Special-Status Wildlife Species Occurring in the Region of the BSA**

| Scientific Name                             | Common Name                                        | Status     |
|---------------------------------------------|----------------------------------------------------|------------|
| <b>Invertebrates</b>                        |                                                    |            |
| <i>Branchinecta lynchi</i>                  | vernal pool fairy shrimp                           | FT, -      |
| <i>Cicindela tranquebarica joaquinensis</i> | San Joaquin tiger beetle                           | - , -      |
| <i>Danaus plexippus</i>                     | monarch butterfly                                  | FC, -      |
| <i>Desmocerus californicus dimorphus</i>    | valley elderberry longhorn beetle                  | FT, -      |
| <i>Gonidea angulata</i>                     | western ridged mussel                              | - , -      |
| <i>Lepidurus packardii</i>                  | vernal pool tadpole shrimp                         | FE, -      |
| <i>Linderiella occidentalis</i>             | California linderiella                             | - , -      |
| <b>Fish</b>                                 |                                                    |            |
| <i>Hypomesus transpacificus</i>             | Delta smelt                                        | FT, SE     |
| <b>Amphibians</b>                           |                                                    |            |
| <i>Ambystoma californiense</i> pop 1        | California tiger salamander central California DPS | FT, ST     |
| <i>Spea hammondi</i>                        | western spadefoot                                  | - , SSC    |
| <b>Reptiles</b>                             |                                                    |            |
| <i>Arizona elegans occidentalis</i>         | California glossy snake                            | - , SSC    |
| <i>Emys marmorata</i>                       | western pond turtle                                | - , SSC    |
| <i>Gambelia sila</i>                        | blunt-nosed leopard lizard                         | FE, SE/SFP |
| <b>Birds</b>                                |                                                    |            |
| <i>Agelaius tricolor</i>                    | tricolored blackbird                               | - , ST/SSC |
| <i>Athene cunicularia</i>                   | burrowing owl                                      | - , SSC    |
| <i>Buteo swainsoni</i>                      | Swainson's hawk                                    | - , ST     |
| <i>Charadrius nivosus nivosus</i>           | western snowy plover                               | FT, SSC    |
| <i>Xanthocephalus xanthocephalus</i>        | yellow-headed blackbird                            | - , SSC    |
| <b>Mammals</b>                              |                                                    |            |
| <i>Dipodomys nitratooides exilis</i>        | Fresno kangaroo rat                                | FE, -      |
| <i>Dipodomys nitratooides nitratooides</i>  | Tipton kangaroo rat                                | FE, SE     |



| Scientific Name               | Common Name                                                        | Status |
|-------------------------------|--------------------------------------------------------------------|--------|
| <i>Lasiurus cinereus</i>      | hoary bat                                                          | - ,    |
| <i>Vulpes macrotis mutica</i> | San Joaquin kit fox                                                | FE, ST |
| Abbreviations:                |                                                                    |        |
| FC                            | Federal Candidate                                                  |        |
| FE                            | Federal Endangered Species                                         |        |
| FT                            | Federal Threatened Species                                         |        |
| SFP                           | Fully Protected Animal, CDFW                                       |        |
| SE                            | California Endangered Species                                      |        |
| ST                            | California Threatened Species                                      |        |
| SSC                           | California Department of Fish and Game Species of Special Concern. |        |

Source: (QK, 2023a)

There is no roosting habitat for monarch butterfly (*Danaus plexippus*) present within the BSA, although it may travel through the BSA as a transient. Additionally, no milkweed (*Asclepias* sp.) was observed within the BSA, which is a required food source for larval monarch butterflies. There are no elderberry shrubs within the BSA to support the valley elderberry longhorn beetle (*Desmocerus californicus*). The BSA lacks suitable sandy open habitat for the remaining insect species, San Joaquin tiger beetle (*Cicindela tranquebarica joaquinensis*).

There are no pooled water features within the BSA capable of supporting crustaceans such as vernal pool fairy shrimp (*Branchinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardii*), or California linderiella (*Linderiella occidentalis*).

There are no creeks, streams, ponds, or wetland features within the BSA capable of supporting several species, including western ridged mussel (*Gonidea angulate*), California tiger salamander (*Ambystoma californiense*), western spadefoot (*Spea hammondi*), and western pond turtle (*Emys marmorata*). There are also no water features present capable of supporting fish species such as the delta smelt (*Hypomesus transpacificus*).

There are no grasslands or native shrub habitats within the BSA that would support California glossy snake (*Arizona elegans occidentalis*) or blunt-nosed leopard lizard (*Gambelia sila*). Except for a few active California ground squirrel burrows located within the northwestern corner of the BSA, there were no small mammal burrows observed that would be capable of providing shelter for California glossy snake or blunt-nosed leopard lizard.

No wetland or riparian habitat exists within the BSA to support nesting or foraging tricolored blackbird (*Agelaius tricolor*), or yellow-headed blackbird (*Xanthocephalus xanthocephalus*). Similarly, the BSA lacks sandy beach or shoreline habitat that would support nesting and foraging western snowy plover (*Charadrius nivosus nivosus*).

Burrowing owl (*Athene cunicularia*) inhabit grassland, open bare ground, and utilize existing small mammal burrows, typically created by California ground squirrel, for breeding and shelter. While a few burrows were observed within the BSA, they displayed clear sign of use by California ground squirrel and no diagnostic sign (e.g., whitewash, tracks, prey

remains) of burrowing owl was observed. The BSA is continually subjected to disturbance through agricultural activities, and it is unlikely to support nesting burrowing owl as they typically prefer isolation from people and loud noises. Burrowing owl may be present as transient foragers, though this is unlikely given the scarcity of a prey base at the site. There are no CNDDDB occurrences of the species within ten miles of the BSA.

There are no rocky outcroppings, mines or caves, cliff faces, tree hollows, or bridges within the BSA that would support the hoary bat (*Lasiurus cinereus*). Due to the historic and ongoing disturbance and absence of suitable small mammal burrows, the BSA does not support the Fresno kangaroo rat (*Dipodomys nitratooides exilis*) or Tipton kangaroo rat (*Dipodomys nitratooides nitratooides*).

The San Joaquin kit fox (*Vulpes macrotis mutica*) is unlikely to habituate within the BSA. The nearest San Joaquin kit fox CNDDDB occurrence (EONDX 66435) is from 2000 and located approximately one mile southeast of the BSA. This occurrence included one adult observed in a walnut (*Juglans sp.*) orchard adjacent to a sand slough. The site is presumed to provide some natural cover and prey base for the individual. The Project site lacks suitable habitat for the species due to the past and current level of disturbance and the surrounding BSA has been similarly degraded. Furthermore, the BSA is situated among intensive agricultural and residential development with no connectivity to natural habitat for the species. No San Joaquin kit fox or diagnostic sign of the species (e.g., tracks, dens, scat, prey remains) were observed during the field survey, and the limited number of small mammal burrows observed indicates the site does not support an adequate prey base. Surrounding land use and habitat conditions make it unlikely that the San Joaquin kit fox would be present, other than as a transient forager.

The large eucalyptus trees in the southwest corner of the BSA could potentially support nesting Swainson's hawk (*Buteo swainsoni*), though no inactive nests were observed within the trees and no Swainson's hawk individuals were observed during the site survey. There is also potential for nesting on nearby powerline structures, and to a lesser extent, surrounding ornamental trees. The nearest CNDDDB occurrence (EONDX 91345) for nesting Swainson's hawk is approximately 4.5 miles northeast of the BSA, where nesting was observed within a large roadside eucalyptus tree in 2012 and 2016. Depending on the time of year, the surrounding crop fields could provide foraging habitat for the species, though this is unlikely due to limited small mammal burrows observed on site indicating a scarcity of an adequate prey base.

Although the Project is anticipated to have no impacts to special-status plants and wildlife species, there is still a potential for Project activities to result in impacts to some of the special-status wildlife species listed above. While the potential for impacts to San Joaquin kit fox, burrowing owl, and Swainson's hawk is low, to avoid these species and other wildlife species, the BRE recommends that measures be implemented as best management practices (BMP) during Project activities. These avoidance and minimization measures would be implemented in and would be included on all engineering plans and specifications (plans and specs). The Project plans and specs would outline the necessary steps to be taken prior

to the start of construction to further reduce impacts on special-status species to a less than significant level and includes conducting a pre-construction clearance survey, construction worker environmental awareness training prior to construction activities, and other avoidance measures should a den or burrow be found during the pre-activity survey.

The City requires, at a minimum, the performance of preconstruction surveys for new development in order to determine if direct mortality to special status species would occur with implementation of construction activities. If, after all avoidance, minimization, and/or mitigation measures have been exhausted or are determined to not be feasible, then new development would have to consult with the applicable wildlife agencies in order to determine how to compensate for direct impacts to special-status species, including, but not necessarily limited to, the possibility of acquiring incidental take permits, developing conservation plans, agree upon phasing of new development to avoid certain sensitive breeding seasons, and/or compensating for the loss of habitat at an agreed upon ratio with the applicable wildlife agency. Additionally, consultation with wildlife agencies and the City is implied by Policy 039, and through consultation with wildlife agencies, direct impacts to special-status species can be avoided, reduced, and/or compensated. With implementation of measures, direct impacts to special-status species would be reduced to the greatest extent feasible.

### ***Nesting Migratory Birds and Raptors***

A single inactive nest was observed within the BSA, presumably that of a white-crowned sparrow. No other active or inactive migratory bird or raptor nests were observed during the survey, though the survey was conducted outside of the breeding season (February 1 through September 15). There are a variety of man-made structures, transmission towers, and trees within the BSA and in the vicinity of the Project which could support a variety of nesting bird species, including larger species such as raptors and common raven. Due to the active agricultural production and seasonal disking of the site, it is unlikely that ground-nesting species would nest on the Project.

To protect nesting migratory birds and raptors specific avoidance and minimization measures are recommended to be included on all Project plans and specs. Implementation of these measures would reduce potential impact to a less than significant level. The recommended measure includes the use of preconstruction clearance surveys, construction worker environmental awareness training prior to construction activities, and avoidance buffers should a nest be identified. If evidence of special-status species is observed, the qualified biologist would determine the appropriate actions to be taken, including monitoring during construction or additional protocol-level surveys, to reduce impacts to the species. Measures also include actions to be taken such as limiting on-site speeds to 20 miles per hour, covering trenches, capping pipes, removing trash on a daily basis, prohibiting pets on site, etc., and these measures will be placed on all plans and specs.

Compliance with City Policies and Goals which includes the use of preconstruction surveys and avoidance measures as necessary, impacts are considered to be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.4b – Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?**

The results of available literature and databases identified two sensitive natural vegetation communities, Valley Sacaton Grassland and Valley Sink Scrub, within the nine-quadrangle search area that includes the Project site. Both Valley Sacaton Grassland and Valley Sink Scrub communities were not observed within the BSA during the survey. Additionally, the BSA does not provide suitable habitat that would support these communities (QK, 2023a).

A retention basin was observed near the southeastern boundary and aerial imagery indicates that the basin is seasonally dry. No riparian habitat was identified on the Project site. Therefore, the Project's impacts would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.4c – Would the Project have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?**

The United States Army Corps of Engineers (USACE) has regulatory authority over the Clean Water Act (CWA), as provided for by the EPA. The USACE has established specific criteria for the determination of wetlands based on the presence of wetland hydrology, hydric soils, and hydrophilic vegetation. There are no federally protected wetlands or vernal pools that occur within the Project.

Wetlands, streams, reservoirs, sloughs, and ponds typically meet the criteria for federal jurisdiction under Section 404 of the CWA and State jurisdiction under the Porter-Cologne Water Quality Control Act. Streams and ponds typically meet the criteria for State jurisdiction under Section 1602 of the California Fish and Game Code.

There were no wetland or water features observed on the Project site, which is further supported by a review of the National Hydrography Dataset (NHD) and National Wetland Inventory (NWI) figures (QK, 2023a). The site survey identified a retention basin located outside of the BSA near the southeastern boundary, but no riparian habitat was noted. As noted, the Project would not impact that off-site basin, and it does not contain a wetland or water feature. Therefore, the Project's impacts would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.4d – Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?**

Wildlife movement corridors also referred to as dispersal corridors or landscape linkages, are generally defined as linear features along which animals can travel from one habitat or resource area to another. Wildlife movement corridors can be large tracts of land that

connect regionally important habitats that support wildlife in general, such as stop-over habitat that supports migrating birds, or large contiguous natural habitats that support animals with very large home ranges (e.g., coyotes [*Canis latrans*] and mule deer [*Odocoileus hemionus californicus*]). They can also be small-scale movement corridors, such as riparian zones, which provide connectivity and cover to support the movement at a local scale.

There are no known wildlife movement corridors or habitat linkages that intersect the BSA. The Project is situated within an area developed for urban and agricultural use and does not provide a linkage between suitable natural habitats for most wildlife species. Due to the disturbed condition of the Project, there is no substantial movement of wildlife onto or off of the BSA (QK, 2023a).

No designated critical habitat occurs within the BSA. The nearest USFWS designated critical habitat is for vernal pool fairy shrimp, California tiger salamander, and vernal pool tadpole shrimp located approximately ten miles northeast of the BSA and for Buena Vista Lake ornate shrew (*Sorex ornatus relictus*) located approximately nine miles southwest of the BSA (QK, 2023a). Therefore, the Project's impacts would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.4e – Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?**

The Project is within the area covered by the City of Hanford General Plan and the Kings County General Plan, which contain policies aimed at preserving biological resources and promoting coordination with federal and State resource agencies. The General Plans include Resource Conservation Goals and policies intended to provide for long-term preservation, enhancement, and enjoyment of plant, wildlife, and aquatic habitat.

The proposed Project does not include and is not adjacent to significant habitat areas or natural areas of high ecological value, nor is it a flood control or drainage Project. As such, habitat mitigation would not be required, and the proposed Project would not conflict with the City of Hanford General Plan or Kings County General Plan objective for the protection of special-status species. The Project would have no impact, and no further analysis in the EIR is warranted.

**Impact #3.4.4f – Would the Project conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan?**

The Project is located within an area covered by the PG&E San Joaquin Valley Operation and Maintenance Habitat Conservation Plan (HCP). That HCP only applies to the maintenance and operations of PG&E facilities and does not apply to this Project. There are no other pertinent HCPs or NCCPs within the Project area. The Project would have no impact, and no further analysis in the EIR is warranted.



|  | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|

### 3.4.5 - CULTURAL RESOURCES

Would the Project:

- |    |                                                                                                                                   |                          |                          |                                     |                          |
|----|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| a. | Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5?      | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b. | Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c. | Disturb any human remains, including those interred outside of formal cemeteries?                                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

The discussion below is based on the Cultural Resources Technical Memo completed for the Project, attached as Appendix C (QK, 2023b).

#### ***Discussion***

#### **Impact #3.4.5a – Would the Project cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5?**

The City of Hanford has three buildings listed on the National Registry of Historic Places, the Hanford Carnegie Library, the Kings County Courthouse, and the Taoist Temple. These buildings are also listed on the California Register of Historic Resources. There are also a number of resources within the City that contribute to its unique culture, yet are not officially listed as historic resources, including its civic and commercial buildings, and residential homes that have Craftsman, Victorian, and Tudor architectural features. The Project site is not located near the listed historic resources and no architecturally significant building was identified on the site.

A cultural resources records search (RS #23-053) was conducted at the Southern San Joaquin Valley Information Center, CSU Bakersfield, to determine whether the proposed Project would impact cultural resources. The records search covered an area within one-half mile of the Project and included a review of the National Register of Historic Places, California Points of Historical Interest, California Registry of Historic Resources, California Historical Landmarks, California State Historic Resources Inventory, and a review of cultural resource reports on file.

The records search indicated that the subject property had never been surveyed for cultural resources and it is not known if any exist on it. Ten cultural resource studies have been conducted within a half mile of the project.



Three historic period cultural resources have been recorded within one-half mile of the project. These are segments of the San Joaquin Valley Railroad (primary no. P-16-000122), and two irrigation features, the Last Chance Ditch (P-16-000128), and People's Ditch (P-16-000246). The project is not located in proximity and would not impact the identified historic resources. A Sacred Lands File request was also submitted to the Native American Heritage Commission. A response dated February 22, 2023, indicates negative results.

Based on the results of cultural records search findings and the lack of historical or archaeological resources previously identified within a half-mile radius of the proposed Project, the potential to encounter subsurface cultural resources is minimal. Additionally, the Project construction would be conducted within the partially developed and previously disturbed parcel. The potential to uncover subsurface historical or archaeological deposits would be considered unlikely.

However, there is still a possibility that historical or archaeological materials may be exposed during construction. Grading and trenching, as well as other ground-disturbing actions, have the potential to damage or destroy these previously unidentified and potentially significant cultural resources within the project area, including historical or archaeological resources. Disturbance of any deposits that have the potential to provide significant cultural data would be considered a significant impact. To reduce the potential impacts of the Project on cultural resources, the City of Hanford General Plan adopted General Plan Goal 05, 06 and Policy 046 (Archaeological Site Consultation), 047 (Archaeological Site Study), 048 (Cultural Site Consultation) and 049 (Cultural Site Discovery) to protect cultural resources. The following measures are recommended to be included as a note on all plans and specs to protect cultural resources and comply with the General Plan for protection of cultural resources.

In the unlikely event construction of the Project inadvertently uncovers previously unknown cultural resources, construction shall be halted, and avoidance and minimization measures will be added to all engineered plans and specs that would outline necessary steps to be taken prior to the start of construction. These measures require all work in the immediate vicinity of the discovery of cultural resources to halt until a qualified archaeologist can evaluate the find and make recommendations. In addition, prior to any ground disturbance, if the City of Hanford receives a request from a Native American tribal group, a surface inspection of the site will be conducted by a tribal monitor, and the tribe will have the opportunity to provide a Native American Monitor during ground-disturbing activities, dependent upon the availability and interest of the tribe.

With the Project's compliance with General Plan goals and policies, impacts are considered to be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.5b – Would the Project cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?**

See Impact #3.4.5a above.

Based on the results of cultural records search findings and the lack of historical or archaeological resources previously identified within a half-mile radius of the proposed Project, the potential to encounter subsurface cultural resources is minimal. However, there is still a possibility that historical or archaeological materials may be exposed during construction. Grading, trenching, and other ground-disturbing actions can damage or destroy these previously unidentified and potentially significant cultural resources within the Project area, including historical or archaeological resources. As noted above, avoidance and minimization measures required for compliance with General Plan goals and policies will be included as notes added to all engineered plans and specs that would outline the required steps to be taken to reduce potential impacts to cultural resources. No further analysis in the EIR is warranted.

**Impact #3.4.5c – Would the Project disturb any human remains, including those interred outside of formal cemeteries?**

There are no known cemeteries or burials on or near the Project. Although unlikely, subsurface construction activities, such as trenching and grading, associated with the proposed Project could potentially disturb previously undiscovered human burial sites. Accordingly, this is a potentially significant impact. However, considered unlikely, subsurface construction activities could cause a potentially significant impact to previously undiscovered human burial sites. The cultural resources and Sacred Lands File records searches did not indicate the presence of human remains, burials, or cemeteries within or in the vicinity of the Project site. No human remains have been discovered at the Project site, and no burials or cemeteries are known to occur within the area of the site. However, construction would involve earth-disturbing activities, and it is still possible that human remains may be discovered, possibly in association with archaeological sites.

Avoidance and minimization measures as required for compliance with General Plan Goals and Policies, will be added to all engineered plans and specs that would outline necessary steps to be taken in the unlikely event construction of the Project inadvertently uncovers previously unknown human remains. This measure will be in accordance with Section 7050.5 of the Health and Safety Code, Section 5097.98 of the Public Resources Code (Chapter 1492, Statutes of 1982, Senate Bill 297), Senate Bill 447 (Chapter 44, Statutes of 1987 and Section 7050.5(c), in the event of the discovery of human remains, at the direction of the county coroner. With the implementation of this condition of approval, impacts would be less than significant, and no further analysis in the EIR is warranted.

|  | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|

3.4.6 - ENERGY

Would the Project:

|                                                                                                                                                                                  |                          |                          |                                     |                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during Project construction or operation? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?                                                                                    | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Discussion

The discussion below is based on the Energy Consumption Technical Memo completed for the Project, attached as Appendix D (QK, 2023c), as well as the AQIA (Trinity Consultants, 2023) and other publicly available data.

Impact #3.4.6a – Would the Project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during Project construction or operation?

CEQA Guidelines require consideration of the potentially significant energy implications of a project. CEQA requires mitigation measures to reduce “wasteful, inefficient, and unnecessary” energy usage (Public Resources Code Section 21100, subdivision [b][3]). The means to conserve energy include decreasing overall energy consumption, decreasing reliance on natural gas and oil, and increasing reliance on renewable energy sources.

Construction

ON-ROAD VEHICLES (CONSTRUCTION)

Due to the nature of the Project, construction of the Project would be limited to the Project site and would only generate on-site (off-road) construction trips and would not contribute to on-road vehicle trips during Project construction (from construction workers and vendors).

OFF-ROAD VEHICLES (CONSTRUCTION)

Off-road construction vehicles would use diesel fuel during the proposed Project's construction phase. Based on the total amount of CO2 emissions expected to be generated by the proposed Project (as provided by the CalEEMod output) and a CO2 to diesel fuel

conversion factor (provided by the U.S. Environmental Protection Agency), the proposed Project would use a total of approximately 1,076 gallons of diesel fuel for off-road construction vehicles for the entirety of the Project’s construction. A non-exhaustive list of constructive off-road vehicles expected to be used during the proposed Project’s construction phase includes cranes, forklifts, generator sets, tractors, excavators, and dozers.

Short-term energy use during the construction phase would be in the form of fuel consumption (e.g., gasoline and diesel fuel) to operate heavy equipment, light-duty vehicles, and machinery. Energy demand during the construction phase would be the result of transportation of materials, construction equipment, and construction worker vehicle trips. Compliance with local and regional regulations during construction would minimize fuel consumption. Energy-saving strategies will be implemented where possible to further reduce the Project’s energy consumption during the construction phase. Strategies being implemented include those recommended by the CARB that may reduce the Project’s energy consumption, including diesel anti-idling measures, light-duty vehicle technology, alternative fuels such as biodiesel blends and ethanol, and heavy-duty vehicle design measures to reduce energy consumption.

**Operations**

CalEEMod uses the California Commercial End-Use Survey (CEUS) database to develop energy intensity values for non-residential buildings. The energy use from residential land uses is calculated based on the Residential Appliance Saturation Survey (RASS). Similar to CEUS, this is a comprehensive energy use assessment that includes the end-use for various climate zones in California. As shown in Table 3.4.6-1, the Project would use up to approximately 8,220,840 kBTU of natural gas per year and approximately 2,727,090 kWh of electricity per year.

**Table 3.4.6-1  
Project Operational Natural Gas and Electricity Usage**

| Emissions <sup>(a)</sup> | Natural Gas (kBTU/year) | Electricity (kWh/year) |
|--------------------------|-------------------------|------------------------|
| Single-Family Housing    | 8,220,840               | 2,727,090              |

Source: Appendix D

The long-term operation of the proposed includes electricity and natural gas service to power internal and exterior building lighting and heating and cooling systems.

**ELECTRICITY AND NATURAL GAS**

Electricity and natural gas used by the proposed Project would be used primarily to power residential homes. Total annual electricity (kWh) and natural gas (kBTU) usage associated with the operation of the proposed Project are shown in Table 3.4.6-1. Further, among the 2020 Kings County population, the energy demand per capita was found to be 0.0028 gigawatts per hour (GWh) and 101,7421 therms. The energy consumption for the Project

per capita would be 0.0026 GWh and 77.6298 therms, which are below the per capita demand for Kings County.

The Project would be required to comply with California's Title 24 energy efficiency requirements and other applicable City development standards. That would include the installation of solar panels on each home's rooftop, which would provide energy from a renewable power source to offset energy generated by fossil fuel-run. The Project will be required to comply with all applicable standards and building codes included in the 2019 California Green Building Standards Code regarding the use of energy-efficient appliances and lighting, low-flow toilets and faucets, drip irrigation, etc. Therefore, the Project will have a less-than-significant impact, and no further analysis in the EIR is warranted.

**Impact #3.4.6b – Would the Project Conflict with or obstruct a State or local plan for renewable energy or energy efficiency?**

See Impact #3.4.6a above.

The construction and operation of the Project would comply with State and local plans and regulations. The proposed Project would be in compliance with all applicable Federal, State, and local regulations regulating energy usage. The Project will comply with Title 24 Energy Efficiency Standards and CalGreen Code requirements for solar-ready roofs, electric vehicle charging, and water conservation. Energy would also be indirectly conserved through water-efficient landscaping requirements consistent with the Kings County Water Efficient Landscaping Ordinance. Stringent solid waste recycling requirements applicable to both project construction and operation would reduce energy consumed in solid waste disposal. In summary, the Project will implement all mandatory federal, State, and local conservation measures, project design features, and voluntary energy conservation measures will further reduce energy demands. Therefore, the Project will not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. Project-related impacts are less than significant.

Stringent solid waste recycling requirements applicable to Project construction and operation would reduce energy consumed in solid waste disposal. In summary, the Project will implement all mandatory federal, State, and local conservation measures, project design features, and voluntary energy conservation measures to reduce energy demands further. Therefore, the Project will not conflict with or obstruct a State or local plan for renewable energy or energy efficiency. Project-related impacts are less than significant, and no further analysis in the EIR is warranted.

|  | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|

### 3.4.7 - GEOLOGY AND SOILS

Would the Project:

- a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.
  - ii. Strong seismic ground shaking?
  - iii. Seismic-related ground failure, including liquefaction?
  - iv. Landslides?
- b. Result in substantial soil erosion or the loss of topsoil?
- c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?
- d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?
- e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater?
- f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

|                          |                          |                                     |                                     |
|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |

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**Discussion**

**Impact #3.4.7a(i) – Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?**

The Alquist-Priolo Earthquake Fault Zoning Act (formerly the Alquist-Priolo Special Studies Zone Act) requires the delineation of zones along active faults in California. The purpose of the Alquist-Priolo Act is to regulate development on or near active fault traces to reduce the hazard of fault rupture; however, surface fault rupture is not necessarily restricted to the area within the Alquist-Priolo Zone. The Alquist-Priolo Act prohibits the location of most structures for human occupancy across active fault traces. Within these zones, cities, and counties must regulate certain development, which includes withholding permits until geologic investigations demonstrate that development sites are not threatened by future surface displacement. There are no designated Alquist-Priolo zones in the City of Hanford according to the General Plan (City of Hanford, 2017).

All of Kings County and the Central Valley are considered seismically active. However, the immediate Hanford area has extremely low seismic activity levels, although shaking may be felt from earthquakes whose epicenters lie to the east, west, and south. Known major faults are over 50 miles distant and include the San Andreas Fault, Coalinga area blind thrust fault(s), and the Long Valley, Owens Valley, and White Wolf/Tehachapi fault systems (Kings County, 2010). The proposed construction and use of the proposed Project would increase the potential exposure of persons working and living in the Project site to possible seismic events, including the risk of loss, injury, and death related to earthquakes and related hazards.

The State classifies Hanford as a moderate seismic risk zone, Category “C” or “D,” depending on the soils under the specific location being categorized and that location’s proximity to the nearest known fault lines. All new structures are required to conform to current seismic protection standards in the California Building Code. By adhering to the 2019 California Building Code and City development standards, the Project will have a less-than-significant impact of endangering people and structures associated with earthquakes. No further analysis in the EIR is warranted.

**Impact #3.4.7a(ii) – Would the Project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic groundshaking?**

See discussion of Impact #3.4.7a(i) above.

Ground movement during an earthquake can vary depending on the overall moment magnitude, distance to the fault, focus of earthquake energy, and type of geologic material. As a rule, the greater the earthquake magnitude and the closer the fault rupture to the site,



the greater the intensity of ground shaking. However, different geologic materials respond differently to earthquake waves. The composition of underlying soils, even those relatively distant from faults, can intensify ground shaking.

According to the Kings County Safety Element, Hanford and the Project site is located in Zone V1, the least expected seismic shaking area, and has relatively low seismic activity (Kings County, 2010). The proposed Project does not include any activities or components that could cause strong seismic ground shaking, either directly or indirectly. The most recent building code takes into account requirements to mitigate seismic impacts. Therefore, Project impacts would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.7a(iii) – Would the Project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?**

Liquefaction occurs when saturated, loose materials are weakened and transformed from a solid to a near-liquid state as a result of increased pore water pressure. For liquefaction to occur, surface and near-surface soil must be saturated and relatively loose. Liquefaction occurs more often in areas under young alluvium where the groundwater table is above 50 feet below the ground surface. In the City, the range is generally between 120 feet to 160 feet below ground surface; therefore, the potential for liquefaction at the proposed Project site is unlikely.

According to the Kings County Safety Element, the risk of liquefaction within the County is considered minimal. Because the Project site is within an area of low seismic activity, and the soils associated with the Project are not suitable for liquefaction, impacts will be less than significant. The area's low potential for seismic activity would further reduce the likelihood of liquefaction occurrence. Because the Project site is within an area of low seismic activity, and the soils associated with the Project are not suitable for liquefaction, impacts will be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.7a(iv) – Would the Project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?**

Landslides include rockfalls, deep slope failure, and shallow slope failure. Factors such as geological conditions, drainage, slope, vegetation, and others directly affect the potential for landslides.

Kings County is listed to have “Low” to “Moderate” risk landslide areas located in the remote uninhabited sections of southwest Kings County. The Project site is within the Landslide Incidence Low (less than 1.5 percent of the area involved), and the development will have a less-than-significant impact (Kings County, 2009). As impacts are anticipated to be less than significant, no further analysis in the EIR is warranted.

**Impact #3.4.7b – Would the Project result in substantial soil erosion or the loss of topsoil?**

Construction activities associated with the proposed Project will disturb surface vegetation and soils during construction and expose these disturbed areas to erosion by wind and water. To reduce the potential for soil erosion and loss of topsoil during construction, the Project would comply with the National Pollutant Discharge Elimination System (NPDES) General Construction Permit from the State of California Central Valley Regional Water Quality Control Board (RWQCB) during construction. Under the NPDES, the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) are required for construction activities that would disturb an area of one acre or more. An SWPPP must identify potential sources of erosion or sedimentation and identify and implement best management practices (BMPs) that ensure reduced erosion. If an SWPPP was not required, the Project would implement the standard BMPs. Typical BMPs intended to control erosion include sandbags, silt fencing, street sweeping, etc. The approval of an SWPPP to comply with the NPDES General Construction Permit is required for any project disturbing one acre or more ground. Therefore, Compliance with local grading and erosion control ordinances would also help minimize adverse effects associated with erosion and sedimentation. Any stockpiled soils would be watered and/or covered to prevent loss due to wind erosion as part of the SWPPP during construction.

The Project will comply with all the City's grading requirements outlined in Title 24 and Appendix J of the California Building Code. The Project is not expected to result in substantial soil erosion or the loss of topsoil with the incorporation of BMPs required under the approved SWPPP and NPDES General Construction Permit.

Once constructed, the Project will have both impermeable surfaces as well as permeable surfaces. Impermeable surfaces would include existing roadways, driveways, and structures. Permeable surfaces would include open areas of the site and any landscaped areas. Overall, the development of the Project would not result in conditions where substantial surface soils would be exposed to wind and water erosion. Therefore, with implementation of required SWPPP and NPDES General Construction Permit design standards and BMPs, the project is expected to result in a less-than-significant impact, and no further analysis in the EIR is warranted.

**Impact #3.4.7c – Would the Project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?**

See discussion in Impact #3.4.7a(iii) and 3.4.7a(iv) above.

There are no slopes on or near the property, and the Project would not expose the people or structures to significant risks from landslides.

The proposed Project will comply with all City and State regulations pertaining to construction, including the Hanford Municipal Code. In addition, the California Geologic Society, in implementing the CA Seismic Hazards Mapping Program, has not identified any

seismically induced landslide hazard zones in Hanford (City of Hanford, 2017). Therefore, complying with the existing regulatory framework would be adequate to reduce any potential impacts to less-than-significant levels. No further analysis in the EIR is warranted.

**Impact #3.4.7d – Would the Project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?**

See Impact #3.4.7a(iii), 3.4.7a(iv) and Impact #3.4.7c above.

Expansive soils are fine-grained soils that can undergo a significant increase in volume with an increase in water content, as well as a significant decrease in volume with a decrease in water content. The City and surrounding area's soils contain percentages of clay that generally range between 7-27 percent. When soil has 35 percent or more clay content, it is considered clayey soil. Since the soil types in the City generally do not contain 35 percent clay content, the potential for expansive soils within the City of Hanford and its surroundings is low (City of Hanford, 2017).

Additionally, the Project would comply with all applicable California Code of Regulations and the most recent California Building Standards Code, which provides criteria for the appropriate design of buildings. The proposed Project would not be located on any identified expansive soils, as defined in the California Building Code. No further analysis in the EIR is warranted.

**Impact #3.4.7e – Would the Project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater?**

The proposed Project would not include septic tanks or any other alternative wastewater disposal systems. The dwelling units will be required to tie into the existing City sewer services. The development of sewer infrastructure will comply with City development standards. Therefore, there would be no impact related to the use of septic systems. Therefore, there would be no impact related to the use of septic systems, and no further analysis in the EIR is warranted.

**Impact #3.4.7f – Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?**

The Project site does not have any known paleontological resources or unique geologic features. There is no evidence that cultural resources of any type (including historical, archaeological, paleontological, or unique geologic features) exist on the Project site. Nevertheless, there is some possibility that a buried site may exist in the area and be obscured by vegetation, fill, or other historical activities, leaving no surface evidence.

The City's 2035 General Plan Goal 06 requires the protection of paleontological resources. With the Project's required compliance with the General Plan and State requirements for

addressing paleontological resources, the protection of potential paleontological resources will occur. Therefore, the Project will have a less-than-significant impact, and no further analysis in the EIR is warranted.

|  | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|

### 3.4.8 - GREENHOUSE GAS EMISSIONS

Would the Project:

- |                                                                                                                                    |                          |                          |                                     |                          |
|------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?        | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b. Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

The impact analyses in this section are based on an *Air Quality & Greenhouse Impact Assessment* (Trinity Consultants, 2023), which is attached as Appendix A. The AQIA analysis of the Project used a higher residential lot count than what is currently proposed. Therefore, it can be presumed that greenhouse gas emission estimates resulting from the Project would be less than the estimates provided in the analysis and discussed in this NOP.

### Discussion

#### Impact #3.4.8a – Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

There have been legislative and regulatory activities that directly and indirectly affect climate change and GHGs in California. The primary climate change legislation in California is AB 32, the California Global Warming Solutions Act of 2006. AB 32 focuses on reducing greenhouse gas (GHG) emissions in California. GHGs, as defined under AB 32, include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride. AB 32 requires that GHGs emitted in California be reduced to 1990 levels by the year 2020. The California Air Resources Board is the State agency charged with monitoring and regulating sources of emissions of GHGs that cause global warming in order to reduce emissions of GHGs. SB 32 was signed by the Governor in 2016, which would require the State Board to ensure that Statewide greenhouse gas emissions are reduced to 40 percent below the 1990 level by 2030.

The Project is under SJVAPCD jurisdiction, which has not adopted a significance threshold for GHG. The South Coast Air Quality Management District (SCAQMD) approach to the assessment of GHG impacts from a project is through the recognition that consumers of electricity and transportation fuels are, in effect, regulated by requiring providers and importers of electricity and fuel to participate in the GHG Cap-and-Trade Program and other Programs (e.g., low carbon fuel standard, renewable portfolio standard, etc.). Each such sector-wide program exists within the framework of AB 32 and its descendant laws the

purpose of which is to achieve GHG emissions reductions consistent with the AB 32 Scoping Plan. In summary, the Project would generate GHGs from electricity use and combustion of gasoline/diesel fuels, each of which is regulated near the top of the supply chain. As such, electricity and fuel purchased are produced in a way that is acceptable to the California market. Thus, Project GHG emissions will be consistent with the relevant plan. Table 3.4.8-1 shows the yearly GHG emissions generated by the Project as determined by the CalEEMod model.

**Table 3.4.8-1**  
**Estimated Annual GHG Emissions**

| Source                            | CO <sub>2</sub> (MT/yr) | CH <sub>4</sub> (MT/yr) | N <sub>2</sub> O (MT/yr) | CO <sub>2</sub> e (MT/yr) |
|-----------------------------------|-------------------------|-------------------------|--------------------------|---------------------------|
| Mitigated Construction            |                         |                         |                          |                           |
| Total                             | 532.55                  | 0.09                    | 0.02                     | 540.10                    |
| Mitigated Operational Emissions   |                         |                         |                          |                           |
| Area Emissions                    | 4.11                    | 0.00                    | 0.00                     | 4.21                      |
| Energy Emissions                  | 482.17                  | 0.02                    | 0.01                     | 485.21                    |
| Mobile Emissions                  | 2,676.37                | 0.18                    | 0.13                     | 2,720.91                  |
| Water Emissions                   | 71.50                   | 4.23                    | 0.00                     | 177.15                    |
| Waste Emissions                   | 23.55                   | 0.72                    | 0.02                     | 46.97                     |
| Total Project                     | 2,257.70                | 5.16                    | 0.16                     | 3,434.45                  |
| Operational Emissions             |                         |                         |                          |                           |
| Annualized Construction Emissions | 17.75                   | 0.00                    | 0.00                     | 18.00                     |
| <b>Project Emissions</b>          | <b>3,275.46</b>         | <b>5.16</b>             | <b>0.16</b>              | <b>3,452.45</b>           |

Source: Appendix A

There would be no increase in the severity to the greenhouse gas impacts, and implementation of the Project will not result in Project-specific or site-specific significant adverse impacts from greenhouse gas emissions within the Project study area. Therefore, no mitigation is required, impacts are less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.8b – Would the Project conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?**

On December 11, 2008, CARB adopted its initial Scoping Plan, which functions as a roadmap of CARB's plans to achieve GHG reductions in California required by AB 32 through subsequently enacted regulations. CARB's 2017 Climate Change Scoping Plan builds on the efforts and plans encompassed in the initial Scoping Plan.

Senate Bill (SB) 375 aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. CARB has provided each affected region with

reduction targets for GHGs emitted by passenger cars and light trucks in the region in 2020 and 2035.

There is no proposed long-term use of large pieces of stationary source equipment or use of diesel-powered vehicles that generate GHG emissions. Once site preparation has been completed, there will be minimal use of any large construction equipment. Because the proposed Project will be consistent with the applicable General Plan land use designation of Low Density Residential, it can be concluded that the proposed Project would not conflict with the approved General Plan. Therefore, the Project is consistent with the growth assumptions used in the applicable AQPs. As a result, the Project will not conflict with or obstruct implementation of any air quality plans. Therefore, no mitigation is needed.

CARB's 2017 Climate Change Scoping Plan builds on the efforts and plans encompassed in the initial Scoping Plan. The current plan has identified new policies and actions to accomplish the State's 2030 GHG limit. Below is a list of applicable strategies in the Scoping Plan and the Project's consistency with those strategies.

- California Light-Duty Vehicle GHG Standards – Implement adopted standards and planned second phase of the program. Align zero-emission vehicles, alternative and renewable fuel, and vehicle technology programs for long-term climate change goals.
- The Project is consistent with this reduction measure. This measure cannot be implemented by a particular project or Lead Agency since it is a statewide measure. When this measure is implemented, standards would be applicable to light-duty vehicles that would access the residential development. The Project would not conflict with or obstruct this reduction measure.
- Energy Efficiency – Pursuit of a comparable investment in energy efficiency from all retail providers of electricity in California. Maximize energy efficiency building and appliance standards.
- The Project is consistent with this reduction measure. Though this measure applies to the State to increase its energy standards, the Project would comply with this measure through existing regulations. The Project would not conflict with or obstruct this reduction measure.
- Low Carbon Fuel – Development and adoption of the low carbon fuel standard.
- The Project is consistent with this reduction measure. This measure cannot be implemented by a particular project or Lead Agency since it is a statewide measure. When this measure is implemented, standards would be applicable to the fuel used by vehicles that would access the residential development. The Project would not conflict with or obstruct this reduction measure.

The SJVAPCD does not have thresholds or guidance regarding the significance of construction-related emissions. Overall, the impacts during the construction phase would be

short-term and temporary. Since there are no current significance thresholds and because construction-related impacts are considered temporary, they are generally considered less than significant. In addition, the construction of the proposed Project would still have to comply with the SJVAPCD's regulations and requirements, as discussed in the air quality section. The Project will not generate significant long-term emissions over the life of the Project. Based on the assessment above, the Project will not conflict with an applicable plan, policy, or regulation adopted to reduce the emissions of greenhouse gases. Therefore, any impacts would be less than significant, and no further analysis in the EIR is warranted.



|                                                                                                                                                                                                                                                                                     | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|----------------------------------------------------------------|-------------------------------------|-------------------------------------|
| <b>3.4.9 - HAZARDS AND HAZARDOUS MATERIALS</b>                                                                                                                                                                                                                                      |                                      |                                                                |                                     |                                     |
| Would the Project:                                                                                                                                                                                                                                                                  |                                      |                                                                |                                     |                                     |
| a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?                                                                                                                                             | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?                                                                                     | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| c. Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?                                                                                                           | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| d. Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?                                                       | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| e. For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard or excessive noise for people residing or working in the Project area? | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| f. Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan?                                                                                                                                                         | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?                                                                                                                                            | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

### Discussion

Impact #3.4.9a – Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

A material is considered hazardous if it appears on a list of hazardous materials prepared by a federal, State, or local agency or if it has characteristics defined as hazardous by such an agency. The California Code of Regulation (CCR) defines a hazardous material as a substance that, because of physical or chemical properties, quantity, concentration, or other characteristics, may either (1) cause an increase in mortality or an increase in serious, irreversible, or incapacitating illness, or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported, or disposed of, or otherwise managed (CCR, Title 22, Division 4.5, Chapter 10, Article 2, Section 66260.10). Hazardous materials have been and are commonly used in commercial, agricultural, and industrial applications and, to a limited extent, in residential areas. Hazardous wastes are defined in the same manner.

### ***Project Construction***

Project construction-related activities may involve the use and transport of hazardous materials. These materials may include fuels, oils, mechanical fluids, and other chemicals used during construction-related activities. These materials could expose human health or the environment to undue risks associated with their use, and no significant impacts will occur during construction activities.

Transportation, storage, use, and disposal of hazardous materials during construction activities will be required to comply with applicable federal, State, and local statutes and regulations. U.S. Department of Transportation and Caltrans regulate the transportation of hazardous materials. Additionally, the City's routes that have been designated for hazardous materials transport would be used. Any hazardous waste or debris that is generated during the construction of the proposed Project would be collected and transported away from the site and disposed of at an approved off-site landfill or other such facilities. In addition, sanitary waste generated during construction would be managed through portable toilets located at reasonably accessible on-site locations.

Hazardous materials such as paint, bleach, water treatment chemicals, gasoline, oil, etc., may be used during construction. These materials are stored in appropriate storage locations and containers in the manner specified by the manufacturer and disposed of in accordance with local, federal, and State regulations. Residential construction generally uses fewer hazardous chemicals or chemicals in relatively small quantities and concentrations compared to commercial or industrial uses. No significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous waste during construction or operation of the new residential development would occur.

### ***Project Operation***

Once constructed, the use of such materials as paint, bleach, etc., is considered common for residential developments. It would be unlikely for such materials to be stored or used in such quantities that would be considered a significant hazard. The Project will not generate or use hazardous materials outside health department requirements. Operation activities will

comply with the California Building Code, local building codes, and applicable safety measures.

Based on the analysis above, Project construction and operation are not anticipated to result in significant impacts due to the transportation, use, or disposal of hazardous materials. Therefore, impacts would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.9b – Would the Project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?**

Hazardous materials handling on the Project site over the long-term construction of the Project may result in soil and groundwater contamination from accidental spills. Construction of the Project would require preparing and implementing an SWPPP, as noted in Impact #3.4.7b. An SWPPP is a State requirement under the National Pollution Discharge Elimination System (NPDES) general permit for construction sites over one acre. The SWPPP identifies potential sources of pollution from the Project that may affect the stormwater discharge quality and requires that best management practices (BMPs) be implemented to prevent contamination at the source. Implementing BMPs during construction would contain accidental spills of hazardous materials, and soil and groundwater contamination would be minimized or prevented. Due to the size of the Project, each construction phase would be required to prepare and implement an SWPPP.

Valley Fever or coccidioidomycosis is prevalent in the Central San Joaquin Valley of California. This disease, which affects both humans and animals, is caused by the inhalation of arthroconidia (spores) of the fungus *Coccidioides immitis* (CI). CI spores are found in the top few inches of soil, and the fungus's existence in most soil areas is temporary. The proposed Project can generate fugitive dust and suspend Valley Fever spores with the dust that could then reach nearby sensitive receptors. It is possible that on-site workers could be exposed to valley fever as fugitive dust is generated during construction. Implementation of dust control measures throughout the construction period would reduce fugitive dust emissions. Therefore, the exposure to Valley Fever would be minimized by implementing these dust control measures that are required as regulatory compliance under SJVAPCD Regulation VIII. Dust from the construction of the proposed Project would not add significantly to the existing exposure level of people to this fungus, including construction workers, and impacts would be reduced to less-than-significant levels.

All Project plans would comply with State and local codes and regulations. Construction and operational activities will also be required to comply with the California fire code to reduce the risk of potential fire hazards. The City's Fire Department will be responsible for enforcing provisions of the fire code.

A review of the State of California Department of Toxic Substances Control (DTSC) Envirostor database indicated that no sites, including State response sites, voluntary cleanup sites, school cleanup sites, or military or school evaluation sites are listed for the subject site

or adjacent properties. Additionally, no Federal Superfund – National Priorities List (NPL) sites were determined to be located within a one-mile radius of the subject site (Department of Toxic Substances Control, 2022).

Review of the State of California Department of Conservation, Geological Energy Management Division (CalGEM) Online Mapping System indicated that no plugged and abandoned or producing oil wells are located on or adjacent to the subject site (CalGEM, 2022).

As noted in Impact #3.4.9a above, if there is a use of hazardous materials during the Project's construction phase, the safe handling and storage of hazardous materials consistent with applicable local and State regulations will be required.

The proposed Project is not anticipated to create a significant hazard to the public or the environment; as mentioned previously in Impact #3.4.9a above, the residential Project would not routinely transport, use, dispose of, or discharge hazardous materials into the environment, and impacts would be less than significant. No further analysis in the EIR is warranted.

**Impact #3.4.9c – Would the Project emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?**

There are no schools within one-quarter mile of the Project site. The closest schools are Martin Luther King Elementary School, approximately 1.15 miles to the east, and Hanford West High School, approximately 1.7 miles to the northeast. Once constructed, residential development is not expected to result in hazardous emissions; therefore, the Project would have a less-than-significant impact, and no further analysis in the EIR is warranted.

**Impact #3.4.9d – Would the Project be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and, as a result, would it create a significant hazard to the public or the environment?**

As noted in Impact #3.4.9b, there are no known existing hazardous material conditions on the Project property. The property is not included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and the Department of Toxic Substances Control (DTSC). The Project itself will not generate or use hazardous materials outside health department requirements.

The Project site was used for agricultural purposes, and it is not anticipated that there are any known underground storage tanks or pipelines located onsite that contain hazardous materials. The disturbance of such items during construction is unlikely. However, in the event any underground storage tanks or pipelines are found, they will be removed in accordance with the removal standards of the Kings County Department of Public Health. Therefore, a less-than-significant impact is seen, and no further analysis in the EIR is warranted.

**Impact #3.4.9e – Would the Project for a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard or excessive noise for people residing or working in the Project area?**

The Project site is not located within two miles of a public airport/airstrip; therefore, it has no impact. The Project site is located approximately 2.7 miles west of Hanford Municipal Airport. The Project site is not located within a Kings County Airport Land Use Compatibility Plan (ALUPC) safety zone or noise contour for Hanford Municipal Airport (Kings County, 1994). The construction and operation of the Project would not result in the generation of noise levels beyond those that exist in the surrounding area. Therefore, the Project would not expose people residing or working in the Project area to excessive noise levels, and there would be no impact. Therefore, impacts would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.9f – Would the Project impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan?**

The 2015 Kings County Emergency Operations Plan (EOP) establishes emergency procedures and policies and identifies responsible parties for emergency response in the County, including the incorporated City of Hanford (Kings County, 2015). The EOP includes policies that would prevent new development from interfering with the emergency response of evacuation plans.

Development of the proposed Project has the potential to strain the emergency response and recovery capabilities of federal, State, and local government. Compliance with the General Plan policies to ensure adequate emergency response and maintain current plans reduces the impact of the development. The proposed Project is consistent with the policy of the General Plan. Additionally, the proposed Project would not inhibit the ability of local roadways to continue to accommodate emergency response and evacuation activities. The proposed Project would not interfere with the City's adopted emergency response plan, and there would be no impact.

The Project site and surrounding area are relatively flat, with little to no topography that might obscure visibility to motorists. Additionally, roadway improvements have been proposed to maintain traffic safety with the anticipated increase in vehicle trips. Therefore, impacts would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.9g – Would the Project expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?**

The proposed Project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or residences are intermixed with wildlands. The City of Hanford is located within a zone considered by CAL FIRE to have low to no potential for wildland fires.

Kings County Fire Station 3 is the closest to the Project site, approximately 0.2 miles east. Given that the Project is not surrounded by wildland areas and is in proximity to existing fire services, the Project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires. There would be no impact related to wildfires, and further analysis in the EIR is not warranted.

|  | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|

### 3.4.10 - HYDROLOGY AND WATER QUALITY

Would the Project:

- |      |                                                                                                                                                                                                                     |                          |                          |                                     |                                     |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| a.   | Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?                                                                             | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| b.   | Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin?                                  | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| c.   | Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would? |                          |                          |                                     |                                     |
| i.   | Result in substantial erosion or siltation on- or off-site;                                                                                                                                                         | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| ii.  | Substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site;                                                                                              | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| iii. | Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or                                | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| iv.  | Impede or redirect flood flows?                                                                                                                                                                                     | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| d.   | In flood hazard, tsunami, or seiche zones, risk release of pollutants due to Project inundation?                                                                                                                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| e.   | Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?                                                                                                | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |

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**Discussion**

This section is based on the Water Supply Assessment (WSA) prepared for the Project (QK, 2023d), which is included as Appendix E of this document. The WSA analysis of the Project used a higher residential lot count than what is currently proposed. Therefore, it can be presumed that water use estimates resulting from the Project would be less than the estimates provided in the WSA.

**Impact #3.4.10a – Would the Project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?**

During construction, potential impacts on water quality arising from erosion and sedimentation are expected to be temporary conditions during the construction of the new development. The new development must develop and comply with an SWPPP that specifies BMPs to prevent construction pollutants from contacting stormwater to keep all erosion products from moving offsite and into receiving waters. The intention is to eliminate or reduce non-stormwater discharge to storm sewer systems and other waters of the United States.

To reduce potential impacts to water quality during construction activities, the Project proponent will be required to prepare and receive approval of an SWPPP. The Project SWPPP would include BMPs to minimize and control the construction and post-construction runoff and erosion to the maximum extent practicable.

The SWPPP is required to be approved by the RWQCB prior to construction. Furthermore, the proposed Project has been designed to control stormwater runoff and erosion, both during and after construction. Project-specific drainage improvements would reduce the proposed Project's potential to violate water quality standards during construction to a less-than-significant impact.

The City Building Division and Public Works Department will review and approve the new development's grading plans and site development requirements.

Senate Bill 610 (Chapter 643, Statutes of 2001) amended State law, effective January 1, 2002, to improve the link between information on water supply availability and land use decisions made by cities and counties. The statute requires detailed information regarding water availability to be provided to city and county decision-makers prior to approval of specified large development projects which are subject to CEQA approval. These include residential, commercial, and industrial uses. The statute also requires this detailed information to be included in the administrative record that serves as the evidentiary basis for an entitlement action by the city or county on such projects. The statute-required water supply assessment (WSA) must examine the availability and sufficiency of an identified water supply under normal-year, single-dry-year, and multiple dry-year conditions over a 20-year projection, accounting for the projected water demand of the Project in addition to other existing and planned future uses of the identified water supply. It was concluded that sufficient Project water supply is available and is in accordance with SB 610's normal year, dry year, and



multiple dry year requirements. Therefore, the proposed Project's potential to violate water quality standards during construction is reduced to a less-than-significant impact with implementation of BMPs associated with the required SWPPP and NPDES permit, and no further analysis in the EIR is warranted.

**Impact #3.4.10b – Would the Project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin?**

The Project site is located within the San Joaquin Valley – Tulare Lake Subbasin, which is identified as being critically over-drafted and subject to Sustainable Groundwater Management Act (SGMA) requirements and the newly formed Groundwater Sustainability Agencies. SGMA consists of three legislative bills, and the legislation provides a framework for long-term sustainable groundwater management across California. The current efforts of the City and Kings County Water District coupled with the requirement of the Sustainable Groundwater Management Act through the Groundwater Sustainability Plan process ensure that future development as an implementation of the General Plan would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. GSAs will then have the responsibility to achieve groundwater sustainability.

***Construction***

The City currently uses groundwater pumped from the Tulare Lake Basin to meet its water demand. Like any activity in Hanford, groundwater would be used for construction. Water would be used for dust control during grading and construction and for minor activities such as washing construction equipment and vehicles. Water demands generated by the Project during the construction phase would be temporary and not substantial. It is anticipated that groundwater supplies would be adequate to meet construction water demands generated by the Project without depleting the underlying aquifer or lowering the local groundwater table. Therefore, Project construction would not deplete groundwater supplies, and impacts would be less than significant.

Project construction would not substantially prevent or inhibit incidental groundwater recharge onsite during precipitation events. As the Project is constructed, portions of the site would remain pervious and would allow infiltration that presently occurs during precipitation events to continue to occur. Therefore, Project construction would not substantially deplete area groundwater supplies or interfere substantially with groundwater recharge, and impacts would be less than significant.

***Operation***

The WSA analyzed a Project with 342 dwelling units, and assumed an average household size in Hanford as 3.5 (QK, 2023d); therefore, under the assumptions, approximately 1,197 people would be housed. However, based on the 326 lots now being proposed, the number of people would be 1,141, which has been calculated for water demand purposes in this

section. According to the City's 2020 Urban Water Management Plan (UWMP), the supply and demand comparison for normal year, single dry year, and multiple dry year are given in Tables 3.4.10-1, 3.4.10-2, and 3.4.10-3 below.

**Table 3.4.10-1  
Normal Year Supply and Demand Comparison**

|            | 2025 (AF) | 2030 (AF) | 2035 (AF) | 2040 (AF) | 2045 (AF) |
|------------|-----------|-----------|-----------|-----------|-----------|
| Supply     | 15,110    | 15,351    | 15,602    | 15,866    | 16,142    |
| Demand     | 11,623    | 12,172    | 12,748    | 13,351    | 13,982    |
| Difference | 3,488     | 3,179     | 2,855     | 2,515     | 2,160     |

Source: Appendix E

**Table 3.4.10-2  
Single Dry Year Supply and Demand Comparison**

|            | 2025 (AF) | 2030 (AF) | 2035 (AF) | 2040 (AF) | 2045 (AF) |
|------------|-----------|-----------|-----------|-----------|-----------|
| Supply     | 15,110    | 15,351    | 15,602    | 15,866    | 16,142    |
| Demand     | 12,971    | 13,584    | 14,227    | 14,899    | 15,604    |
| Difference | 2,140     | 1,767     | 1,376     | 967       | 538       |

Source: Appendix E

**Table 3.4.10-3  
Five Consecutive Dry Year Supply and Demand Comparison**

|             |            | 2025 (AF) | 2030 (AF) | 2035 (AF) | 2040 (AF) | 2045 (AF) |
|-------------|------------|-----------|-----------|-----------|-----------|-----------|
| First Year  | Supply     | 15,110    | 15,351    | 15,602    | 15,866    | 16,142    |
|             | Demand     | 12,971    | 13,584    | 14,227    | 14,899    | 15,604    |
|             | Difference | 2,140     | 1,767     | 1,376     | 967       | 538       |
| Second Year | Supply     | 15,110    | 15,351    | 15,602    | 15,866    | 16,142    |
|             | Demand     | 12,971    | 13,584    | 14,227    | 14,899    | 15,604    |
|             | Difference | 2,140     | 1,767     | 1,376     | 967       | 538       |
| Third Year  | Supply     | 15,110    | 15,351    | 15,602    | 15,866    | 16,142    |
|             | Demand     | 12,971    | 13,584    | 14,227    | 14,899    | 15,604    |
|             | Difference | 2,140     | 1,767     | 1,376     | 967       | 538       |
| Fourth Year | Supply     | 15,110    | 15,351    | 15,602    | 15,866    | 16,142    |
|             | Demand     | 12,971    | 13,584    | 14,227    | 14,899    | 15,604    |
|             | Difference | 2,140     | 1,767     | 1,376     | 967       | 538       |
| Fifth Year  | Supply     | 15,110    | 15,351    | 15,602    | 15,866    | 16,142    |
|             | Demand     | 12,971    | 13,584    | 14,227    | 14,899    | 15,604    |
|             | Difference | 2,140     | 1,767     | 1,376     | 967       | 538       |

Source: Appendix E

Per the UWMP, approximately 11,715 acre-feet of water was delivered to an estimated 17,965 water service connections, of which approximately 67.5% of the water use is for residential services (City of Hanford, 2020). Based on an average day water demand of 125 gallons per day per person, the proposed Project would result in an estimated water demand

of 52.06 million gallons per year (1,162 people x 125 gallons/day x 365 days = 52.06 million gallons/year) or 162.7 159.76 acre-feet per year.

The Project will follow requirements as applicable in the City of Hanford and Kings County Groundwater Sustainability Plan (Greater Kaweah Groundwater Sustainability Agency, 2020). Given that the water needed for the Project's construction is temporary and minimal, and operations will be within projections associated with the UWMP, the Project's construction and operations would not substantially deplete groundwater supplies or conflict with any future adopted groundwater management plan.

Since the Project is consistent with the General Plan designation, the Project's water usage has been accounted for in the UWMP. This Project's groundwater usage would not change the condition of groundwater water supplies in the Basin beyond the baseline conditions and projections already analyzed in the 2020 UWMP. Therefore, the Project's construction and operations would not substantially deplete groundwater supplies or interfere significantly with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. Impacts would be less than significant. Impacts would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.10c(i) – Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site?**

The Project site is relatively flat grading would be minimal. The topography of the site would not appreciably change because of grading activities. The site does not contain any blue-line water features, including streams or rivers. The Project has a proposed storm basin that will collect stormwater runoff on the site (QK, 2023a). The Project would develop areas of impervious surfaces that would reduce the rate of percolation at the site or concentrate, but areas of open space would allow for the percolation of stormwater to recharge the aquifer, or the water would be directed into the City's existing stormwater sewer system. The Project would comply with applicable City development standards and codes. Therefore, the Project would have a less-than-significant impact on drainage patterns or cause substantial erosion or siltation on or off the site.

As discussed in Impact #3.4.10a above, potential impacts on water quality from erosion and sedimentation are expected to be localized and temporary during construction. Construction-related erosion and sedimentation impacts due to soil disturbance would be less than significant after implementing an SWPPP and BMPs required by the NPDES. No drainages or other water bodies are present on the Project site, and therefore, the proposed Project would not change the course of any such drainages.

The existing drainage pattern of the site and area would be affected by Project development because of the increase in impervious surfaces at the site. The Project design includes natural features such as landscaping vegetation and a retention basin that would allow for the percolation of stormwater. However, there will be an addition in impervious surfaces that

could increase the potential for stormwater runoff and soil erosion. The Project would connect to existing City stormwater sewer infrastructure. The Project will comply with all applicable local building codes and regulations to minimize impacts during construction and post-construction. With compliance of the required NPDES permit and SWPPP, impacts related to erosion or siltation on- or off-site are less than significant. No further analysis in the EIR is warranted.

**Impact #3.4.10c(ii) – Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?**

No drainages or other water bodies are present on the Project site. Therefore, the development of the site would not change the course of any such drainages that may potentially result in on or offsite flooding. Water would be used during the temporary construction phase of the Proposed project (e.g., for dust suppression). However, any water used for dust control would be mechanically and precisely applied and would generally infiltrate or evaporate prior to running off.

The Project site is flat, and the proposed grading would not substantially alter the overall topography of the Project site. Although the amount of surface runoff on the Project site would not substantially increase with the construction of the Project, runoff patterns and concentrations could be altered by grading activities associated with the Project. Improper design of the access road or building pads could alter drainage patterns that would cause flooding on or offsite. The potential for the construction of the proposed Project to alter existing drainage patterns would be minimized through compliance with the preparation of an SWPPP. With the implementation of such measures, the Project would not substantially increase the amount of runoff to result in flooding on or offsite. Impacts would be reduced to less-than-significant levels.

Additionally, approval of grading plans and site development requirements by the City Building Division that incorporates BMPs and design standards, the new development operations would not substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or offsite. Impacts would be less than significant with compliance with the required NPDES permit, and approval of an SWPPP. No further analysis in the EIR is warranted.

**Impact #3.4.10c(iii) – Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?**

Please see Impact #3.4.10c(i)-(ii) above.

Water would be used during the temporary construction phase of the proposed Project (e.g., for dust suppression). However, any water used for dust control would be mechanically and precisely applied and would generally infiltrate or evaporate prior to running off.

The Project would comply with all applicable State and City codes and regulations. The Project will construct a stormwater retention basin onsite to capture stormwater. Engineering calculations will support the storm drainage plan to ensure that the Project does not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Therefore, the Project would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Impacts would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.10c(iv) – Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would impede or redirect flood flows?**

See also Impact #3.4.10(a through c[iii]).

The Project will construct a stormwater retention basin onsite to capture stormwater, and the storm drainage plan would be reviewed and approved by the City. The Project would comply with all applicable State and City codes and regulations. A grading plan will be submitted for review and approval before construction activities to ensure it meets City standards.

The Project site is within an area of minimal flood hazard. There are no development restrictions associated since these are areas determined to be outside the 0.2 percent annual chance floodplain. Impacts would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.10d – Would the Project in flood hazard, tsunami, or seiche zones, risk release of pollutants due to Project inundation?**

The Project site is not located by the ocean or lake large enough to produce seiches. Therefore, there is no risk that the new development would be inundated by tsunami or seiches. The Project area is flat and does not contain slopes steep enough to cause a mudflow, avalanche, or significant ground-related risks. As noted above, the Project site is not located within the 100-year floodplain, and there do not appear to be any significant levees that could potentially affect people or structures if they were to fail.

The Kings County EOP concludes that dam inundation is not a significant hazard due to the very low probability of dam failure and the distance of Hanford from existing dams (Kings County, 2015). The Project site is not located in the dam inundation area and would therefore not expose people or structures to risk due to dam or levee failure. There would be no impact.

There is no potential for the inundation of the Project site by seiche. Therefore, the Project would not contribute to inundation by seiche, tsunami, or mudflow, and no further analysis in the EIR is warranted.

**Impact #3.4.10e – Would the Project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?**

See response #3.4.10b above. The water demand from this Project would not result in a significant impact due to depleted groundwater resources or interference with groundwater recharge. Per the City's 2020 UWMP and under conclusions made in the prepared WSA, the City's existing system has a total supply capacity that can accommodate the Project (QK, 2023d).

|  | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|
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### 3.4.11 - LAND USE AND PLANNING

Would the Project:

- |    |                                                                                                                                                                                    |                                     |                          |                          |                                     |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|
| a. | Physically divide an established community?                                                                                                                                        | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b. | Cause a significant environmental impact due to a conflict with any land use plan, policy or regulation adopted for the purpose of avoiding or mitigating an environmental effect? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |

### Discussion

#### Impact #3.4.11a – Would the Project physically divide an established community?

The Project site is on the edge of the City's core development area, which is expanding with the need for additional housing. There is residential development to the east, with undeveloped agricultural land to the west and north. As a note, the proposed Billingsley Ranch residential subdivision project is located directly west of the Project site. The Project proposes connecting to existing roadways, providing future connectivity access, and not dividing an established or future community. Future development would not be built in a pre-existing community area and would not create any physical barrier between an established community. Therefore, the Project would not result in an impact, and no further analysis in the EIR is warranted.

#### Impact #3.4.11b – Would the Project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

The Land Use and Planning section of the focused EIR will evaluate the consistency of the proposed project with City General Plan policies, zoning regulations, and LAFCo policies adopted for the purpose of avoiding or mitigating an environmental impact, pursuant to Appendix G of CEQA Guidelines in the EIR.

|  | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
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### 3.4.12 - MINERAL RESOURCES

Would the Project:

- |    |                                                                                                                                                                     |                          |                          |                          |                                     |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|
| a. | Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b. | Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

### Discussion

#### Impact #3.4.12a – Would the Project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?

The California Department of Conservation and Geological Survey classifies lands into Aggregate and Mineral Resource Zones (MRZs) based on guidelines adopted by the California State Mining and Geology Board, as mandated by the Surface Mining and Reclamation Act of 1974. These MRZs identify whether known or inferred significant mineral resources are present in areas. Lead agencies are required to incorporate identified MRZs resource areas delineated by the State into their General Plans. Neither the Project site nor the surrounding area is designated as a Mineral Resources Zone in the City of Hanford General Plan or zoning ordinance, nor is it currently being utilized for mineral extraction (City of Hanford, 2014). The Project site is also not within a CalGEM-identified oilfield or gas field.

The Project design does not include mineral extraction. The Project would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State and no further analysis in the EIR is warranted.

#### Impact #3.4.12b – Would the Project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

See Impact #3.4.12a above. No portion of the City or nearby vicinity is designated for mineral resources or zoned for mineral resources (City of Hanford, 2017). Therefore, the Project would not result in the loss of availability of a locally important mineral resources recovery site delineated on a local general plan, specific plan, or any other land use, and there would be no impact. No further analysis in the EIR is warranted.



|  | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
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|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|

### 3.4.13 - NOISE

Would the Project result in:

- |    |                                                                                                                                                                                                                                                                                                        |                          |                          |                                     |                                     |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| a. | Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?                                                         | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| b. | Generation of excessive groundborne vibration or groundborne noise levels?                                                                                                                                                                                                                             | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| c. | For a Project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

### Discussion

**Impact #3.4.13a – Would the Project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?**

Land uses deemed sensitive receptors include schools, hospitals, rest homes, and long-term care and mental care facilities, which are considered to be more sensitive to ambient noise levels than others. The nearest sensitive land uses include widely spaced residential homes to the south and west.

Stationary noise sources can also influence the population, and unlike mobile, transportation-related noise sources, these sources generally have a more permanent and consistent impact on people. These stationary noise sources involve a wide spectrum of uses and activities, including various industrial uses, commercial operations, agricultural production, school playgrounds, high school football games, HVAC units, generators, lawn maintenance equipment, and swimming pool pumps.

The General Plan Noise Element and City Municipal Code outline policies and regulations to mitigate the health effects of noise in the community and prevent exposure to excessive noise levels. In particular, policies in the General Plan regarding new development include:

- Policy H41 Interior Noise Exposure. Adopt State Noise Insulation Standards (California Code of Regulations, Title 24) and Chapter 35 of the Uniform Building Code (UBC) concerning interior noise exposure for new single, and multi-family housing, hotels, and motels.
- Policy H42 Noise Evaluation for New Development. Evaluate proposed development proposals against existing and future noise levels from ground transportation noise sources. Policy H43 Non-Transportation Noise. Mitigate noise created by non-transportation noise sources so as not to exceed the maximum allowable interior and exterior noise level standards.
- Policy H48 Noise Mitigation for Construction Activities. Require all development projects to mitigate noise impacts associated with construction activities. Policy H50 Sound Walls. Utilize sound walls at the perimeter of new residential developments to protect from noise generated by transportation corridors.

During the Project's construction phase, noise-generating activities will be present; however, it will be temporary, and any machinery used as a part of the construction of the Project will be muffled. Construction activities would be temporary in nature and are anticipated to occur during normal daytime working hours. Construction is anticipated to take approximately 12 months to complete. The City Noise Ordinance- 9.10.060.10 requires construction to occur between the hours of 7:00 a.m. and 8:00 p.m. There are no specific construction noise thresholds established by the City other than the noise-generating construction activities that are only allowed to occur between the hours of 7:00 a.m. and 8:00 p.m. However, the proposed Project's construction would be temporary and would occur between 7:00 a.m. to 8:00 p.m., five days a week for approximately 12 months. No demolition or pile-driving will occur during the construction phase of the Project (City of Hanford, 2022). The Project will comply with this ordinance to the greatest extent feasible, which will reduce temporary noise impacts to less than significant levels.

Once constructed, the Project would not significantly increase traffic on local roadways. Residential activities could also increase ambient noise levels in the immediate Project vicinity. Activities that could be expected to generate noise include cars entering and exiting the development and mechanical systems related to heating, ventilation, and air conditioning systems located in residential buildings. However, the development will be surrounded by a six-foot-high block wall, which will reduce the noise emanating from residences. Additionally, this noise would be similar to those generated by the nearby existing residential development and would not be of a level that exceeds thresholds. Therefore, these increases in ambient noise are considered less than significant and consistent with applicable standards. No further analysis in the EIR is warranted.

**Impact #3.4.13b – Would the Project result in generation of excessive groundborne vibration or groundborne noise levels?**

The proposed Project is expected to create temporary ground-borne vibration as a result of the construction activities (during site preparation and grading). According to the U.S. Department of Transportation, Federal Railroad Administration, vibration is sound radiated through the ground. The rumbling sound caused by the vibration is called groundborne noise. The ground motion caused by vibration is measured as particle velocity in inches per second and is referenced as vibration decibels (VdB). The background vibration velocity level in residential areas is usually around 50 VdB. A list of typical vibration-generating equipment is shown in Table 3.4.13-1. However, the Project does not propose to use this specific equipment. The table is meant to illustrate typical vibration levels for various pieces of equipment.

**Table 3.4.13-1**  
**Different Levels of Groundborne Vibration**

| Vibration Velocity Level | Equipment Type   |
|--------------------------|------------------|
| 94 VdB                   | Vibratory roller |
| 87 VdB                   | Large bulldozer  |
| 87 VdB                   | Caisson drilling |
| 86 VdB                   | Loaded trucks    |
| 79 VdB                   | Jackhammer       |
| 58 VdB                   | Small bulldozer  |

Source: (Federal Transit Administration, 2006) Note: 25 feet from the corresponding equipment.

The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people.

The Federal Transit Administration (FTA) has published standard vibration velocities for construction equipment operations (Federal Highway Administration (FHWA), U.S. Department of Transportation, 2017). In general, the FTA architectural damage criterion for continuous vibrations (i.e., 0.2 inch/second) appears to be conservative even for sustained pile driving. Building damage can be cosmetic or structural. Ordinary buildings that are not particularly fragile would not experience any cosmetic damage (e.g., plaster cracks) at distances beyond 30 feet. This distance can vary substantially depending on the soil composition and underground geological layer between vibration source and receiver. In addition, not all buildings respond similarly to vibration generated by construction equipment. The typical vibration produced by construction equipment is illustrated in Table 3.4.13-2.

With regard to the proposed Project, groundborne vibration would be generated during site clearing and grading activities onsite facilitated by the implementation of the proposed Project. As indicated in Table 3.4.13-2, based on the FTA data, vibration velocities from typical heavy construction equipment that would be used during Project construction range from 0.076 to 0.210 inch-per-second peak particle velocity (PPV) at 25 feet from the source of activity. As demonstrated in Table 3.4.13-2, vibration levels at 100 feet would range from 0.010 to 0.026 PPV. Therefore, the anticipated vibration levels would not exceed the 0.2 inch-

per-second PPV significance threshold during construction operations at the nearest receptors, which are residences located easterly adjacent to the Project site.

**Table 3.4.13-2  
Typical Vibration Levels for Construction Equipment**

| Equipment                  | Reference peak particle velocity at 25 feet (inches/second) <sup>1</sup> | Approximate peak particle velocity at 100 feet (inches/second) <sup>2</sup> |
|----------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| Large Bulldozer            | 0.089                                                                    | 0.011                                                                       |
| Loaded Trucks              | 0.076                                                                    | 0.010                                                                       |
| Small Bulldozer            | 0.003                                                                    | 0.000                                                                       |
| Auger/drill Rigs           | 0.089                                                                    | 0.011                                                                       |
| Jackhammer                 | 0.035                                                                    | 0.004                                                                       |
| Vibratory Hammer           | 0.070                                                                    | 0.009                                                                       |
| Vibratory Compactor/roller | 0.210                                                                    | 0.026                                                                       |

Notes:

1 – Federal Transit Administration, Transit Noise and Vibration Impact Assessment Guidelines, May 2006. Table 12-2.

2 – Calculated using the following formula:  $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

where:  $PPV_{equip}$  = the peak particle velocity in/sec of the equipment adjusted for the distance  $PPV_{ref}$  = the reference vibration level in/sec from Table 12-2 of the FTA Transit Noise and Vibration Impact Assessment Guidelines  
 $D$  = the distance from the equipment to the receiver

Typical outdoor sources of perceptible ground-borne vibration are construction equipment and traffic on rough roads. For example, if a roadway is smooth, the ground-borne vibration from traffic is barely perceptible.

Typically, ground-borne vibration generated by construction activity attenuates rapidly with distance from the source of the vibration. Therefore, vibration issues are generally confined to distances of less than 500 feet (U.S. Department of Transportation, 2005). Potential sources of temporary vibration during the construction of the proposed Project would be minimal and would include the transportation of equipment to the site.

Construction activity would include various site preparation, grading, fabrication, and site cleanup work. Construction would not involve the use of equipment that would cause high ground-borne vibration levels, such as pile-driving or blasting. Once constructed, the proposed Project would not have any components that would generate high vibration levels. Thus, the construction and operation of the proposed Project would not result in any vibration, impacts would be less than significant and no further analysis in the EIR is warranted.

**Impact #3.4.13c – Would the Project result in for a Project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?**

As noted previously, the Project site is approximately 2.8 miles west of the Hanford Municipal Airport, and outside hazards or noise contour zone boundary as identified in the Kings ALUCP (Kings County, 1994). The noise levels associated with the airport operations do not contribute significantly to the overall noise environment at the Project site. Therefore, the Project would not expose people residing or working in the Project area to excessive noise levels, and there would be no impact and no further analysis in the EIR is warranted.

| Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less- than<br>Significant<br>Impact | No<br>Impact |
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### 3.4.14 - POPULATION AND HOUSING

Would the Project:

- |                                                                                                                                                                                                                     |                          |                          |                                     |                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| a. Induce substantial population unplanned growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?                                                                                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

### Discussion

**Impact #3.4.14a – Would the Project induce substantial population unplanned growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?**

According to the 2020 U.S. Census Bureau estimates, the population in Hanford was 57,990 people (U.S. Census Bureau, 2022). The City is expected to increase its population by 32,010 residents in the next 20 years. The City's General Plan goals include encouraging residential developments to meet the future population growth needs. The Project proposed 326 new housing units, and the average number of persons per household in the City of Hanford is 3.5(QK, 2023d). Therefore, the Project will house approximately 1,141 people. Regional Housing Needs Allocation (RHNA) from the California Department of Housing and Community Development specifies the number of units, by affordability level, that need to be accommodated.

**Table 3.4.14-1  
Regional Housing Needs 2014-2024 (Hanford)**

| Housing Type   | Federal Standards |
|----------------|-------------------|
| Extremely Low  | 549               |
| Very Low       | 548               |
| Low            | 821               |
| Low Moderate   | 865               |
| Above Moderate | 2,049             |
| <b>Total</b>   | <b>4,832</b>      |

Source: (City of Hanford, 2022)

The Project directly induces population growth in an area by proposing new residential development. However, the population of the City is expected to grow by more than 50 percent over the next 20 years, furthering the need for additional dwelling units. The 6<sup>th</sup> Cycle RHNA states that the City of Hanford will need to provide an additional 5,547 dwelling units by 2035. The proposed Project will provide an estimated additional 326 single-family units. The Project is also consistent with the density allowed in the General Plan planned for population growth. The Project will help the City of Hanford work toward attaining a sufficient housing supply for its residents. Therefore, impacts will be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.14b – Would the Project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?**

Construction of the Project is anticipated to last 12 months and would likely be completed by construction workers residing in the City or the surrounding area; they would not require new housing. The Project site is undeveloped and will not displace existing people or housing, necessitating replacing housing elsewhere. Therefore, the Project would have no impact, and no further analysis in the EIR is warranted.

| Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
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### 3.4.15 - PUBLIC SERVICES

Would the Project:

- a. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or to other performance objectives for any of the public services:

|                             |                          |                          |                                     |                          |
|-----------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| i. Fire protection?         | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| ii. Police protection?      | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| iii. Schools?               | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| iv. Parks?                  | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| v. Other public facilities? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

### Discussion

**Impact #3.4.15a(i) – Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or to other performance objectives for any of the public services - Fire Protection?**

The Project site is located approximately 0.28 miles west of Kings County Fire Department Station 3.

The proposed Project will comply with Title 24 of the California Building Code and local development standards. Prior to the recordation of any subdivision map, the applicant will be required to enter into an agreement with the City to contribute towards necessary fire protection equipment and/or facilities as determined through negotiations between the City and the applicant.



An approved water supply system capable of supplying the required fire flow for fire protection purposes is to be installed by the Project. The establishment of gallons-per-minute requirements for fire flow shall be based on the Guide for Determination of Required Fire Flow, published by the State Insurance Service Office and the City's adopted Fire Code.

Development of the Project will increase the need for fire protection services and expand the service area and response times of the local City Fire Department. The Project would install the required infrastructure to meet water supply demands for fire protection services. Fire hydrants would also be located and installed per the City fire standards. These design standards, coupled with existing fire protection infrastructure, would provide the proper fire suppression services onsite. By incorporating the fire standards and the required design features in the Project design, additional fire protection services will be required to provide the Project's coverage. Because the Project will increase both the need and the demand for fire protection services in the City, the Project will comply with impact fee requirements.

According to the General Plan, the Project plans and permits will be reviewed for input from the Police and Fire Departments. The Project's proposed construction would be located adjacent to existing residential areas, which the City Fire Department already serves. The developer will be required to pay development impact fees to offset the growth in population in the area that would impact fire protection. Impacts would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.15a(ii) – Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or to other performance objectives for any of the public services – Police Protection?**

The City of Hanford Police Department is located approximately two miles northeast of the Project and provides law enforcement and public protection. The proposed Project would be located adjacent to residential subdivisions that the City police station serves.

The Project proposes additional residential development in a previously undeveloped location, which will increase the need for police services. The Project will pay appropriate development fees based on the adopted fee calculations and is responsible for constructing any infrastructure needed to serve the Project. The Project may result in significant environmental impacts related to acceptable service ratios, response times, or other performance objectives specific to police protection services, and expanded police coverage may be required. Impacts would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.15a(iii) – Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or to other performance objectives for any of the public services – Schools?**

The local school districts include Hanford Joint Union High and Armona Union Elementary school districts. Local districts typically serve both a portion of the City and areas of Kings County. Armona Union Elementary local school districts provide elementary, and one local school district provides secondary education to the City of Hanford. The increased population generated by the proposed Project would increase the number of students attending local schools and could significantly impact these facilities by requiring new facilities. The proposed Project would require the payment of Developer fees for each new residential construction to offset the District's student classroom capacity. The developer will pay appropriate impact fees at the time of building permits. According to Government Code Section 65996, the development fees authorized by SB 50 are deemed "full and complete school facilities mitigation." School districts would utilize the General Plan and codes to establish new school sites and make decisions on school amenities and facility size. The development will be subject to School Impact Fees to mitigate any increased impacts on school facilities, and no further analysis in the EIR is warranted.

**Impact #3.4.15a(iv) – Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or to other performance objectives for any of the public services – Parks?**

The Project is within the boundaries of the Hanford Parks and Recreation District. The proposed Project includes uses that would increase the use of park and recreation facilities in the area. The City presently owns and maintains 24 parks. The closest City-maintained park is Centennial Park located approximately 0.59 miles east of the Project site.

According to the 2020 Parks and Recreation Master Plan, the City currently offers 299.70 acres of parkland which equates to a total Level of Service (LOS) of 5.06 acres of parkland per 1,000 residents based on the City's 2018 population. The 2035 General Plan includes a LOS standard goal of 3.5 acres per 1,000 residents for future growth. Similar to other public services, the City had established the Park Facilities Impact Fee - Policy O65 pursuant to Chapter 15.44 of the City Municipal Code. The parks facilities development impact fee is established on the issuance of all residential building permits for development in the Hanford city area to pay for parks and recreational facilities improvements. Each developer will pay this development fee prior to the issuance of a building permit. The Project will pay its assessed fees as required by Policy O65. Additionally, a 3.58-acre neighborhood park is planned to be developed to provide recreational space in the immediate space of the proposed subdivision. Therefore, impacts would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.15a(v) – Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response**

**times, or to other performance objectives for any of the public services – Other Public Facilities?**

The City provides a wide range of public services to the public besides those services previously mentioned above. The City also provides animal control services, refuse pick-up, library facilities, and drainage management. These services are generally funded through the general fund, usage fees, fines, penalties, or impact fee collection.

In the City of Hanford, all jurisdictions collect planning and building fees and impact fees for new development, as necessary. Since the demand for other public facilities is driven by population, the proposed Project would be required to pay fees to offset the demand for that service. Therefore, the Project would have a less-than-significant impact, and no further analysis in the EIR is warranted.

|  | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|

### 3.4.16 - RECREATION

Would the Project:

- |                                                                                                                                                                                              |                          |                          |                                     |                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| a. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| b. Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

### Discussion

**Impact #3.4.16a – Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?**

See Impact #3.4.15a(ii) above.

The City's inventory of parks and recreation facilities ranges from a rose garden to softball and baseball fields to community centers. Park facilities are classified into nine categories: private recreational space, mini-park or pocket park, neighborhood parks, community parks, special use parks, dual-purpose stormwater basin park, indoor recreational facilities, school parks, and regional parks. Recreational facilities span from picnic shelters to sports fields. Hanford maintains 229.17 acres of park and grounds, including inspection of Landscape Assessment Districts and right of way and median landscape acreage. Additionally, several elementary schools within Hanford provide public open space during non-school hours.

The Project would not require the construction of additional recreational facilities due to the existing ratio of at least 5.06 acres per 1,000 residents. Given the close proximity to Centennial and Heritage Parks, the Project is required to meet a reduced ratio of 3.5 acres per 1,000 residents and proposed the development of a 3.58-acre neighborhood park. The City of Hanford requires that the Project developer pay Park Impact Fees for parkland, community centers, recreational facilities, park amenities, vehicle equipment, and impact fee studies to offset any potential impacts from new development.

Although the proposed Project includes uses that would increase the use of park and recreation facilities in the area, payment of Park Impact Fees will address impacts associated with maintenance and upkeep of park and recreation facilities result from increased use

and will not result in the substantial physical deterioration of existing parks or recreational facilities. There would be a less-than-significant impact with the payment of the impact fees. No further analysis in the EIR is warranted.

**Impact #3.4.16b – Would the Project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?**

The Project includes the development of a 3.58-acre neighborhood park. The development of this neighborhood park will provide outdoor recreational space for residents in the immediate area. The Project does not include the expansion of existing recreational facilities. There will be no impact, and no further analysis in the EIR is warranted.

|  | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|
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### 3.4.17 - TRANSPORTATION AND TRAFFIC

Would the Project:

|    |                                                                                                                                                               |                                     |                          |                                     |                          |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|
| a. | Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| b. | Conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b)?                                                                            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| c. | Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d. | Result in inadequate emergency access?                                                                                                                        | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

### Discussion

**Impact #3.4.17a – Would the Project conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?**

The subject Project site is located south of Hanford Armona Road between Greenbrier Driver to the east and 13<sup>th</sup> Avenue to the west. The Project could potentially significantly impact the local circulation system and level of service at nearby intersections. A Traffic Impact Analysis will be prepared and impacts to the circulation system will be analyzed in the EIR.

**Impact #3.4.17b – Would the Project conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b)?**

CEQA Guidelines Section 15064.3 subdivision (b) was adopted in December 2018 by the California Natural Resources Agency. These revisions to the CEQA Guidelines criteria for determining the significance of transportation impacts shift the focus from driver delay to a reduction of vehicular greenhouse gas emissions through the creation of multimodal vehicle trips. Vehicle miles traveled (VMT) is a measure of the total number of miles driven for various purposes and is sometimes expressed as an average per trip or per person.

In the case of this Project, the anticipated VMT impacts could potentially exceed established significance thresholds. As such, an in-depth VMT analysis is required and will be further analyzed in the EIR.

**Impact #3.4.17c – Would the Project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?**

The Project will be designed to meet current standards and safety regulations. All intersections will be constructed to comply with the City and Caltrans regulations and design and safety standards of Chapter 33 of the California Building Code (CBC) and the guidelines of Title 24 to create safe and accessible roadways.

Vehicles exiting the subdivision will be provided with a clear view of the roadway without obstructions. Landscaping associated with the entry driveways could impede such views if improperly installed. Specific circulation patterns and roadway designs will incorporate all applicable safety measures to ensure that hazardous design features or inadequate emergency access to the site or other areas surrounding the Project area would not occur.

Therefore, the Project will have a less-than-significant impact with the incorporated design features and all applicable rules and regulations. No further analysis in the EIR is warranted.

**Impact #3.4.17d – Would the Project result in inadequate emergency access?**

See the discussion in Impact #3.4.9f

State and City fire codes establish standards by which emergency access may be determined. The proposed Project would have to provide adequate unobstructed space for fire trucks to turn around. The proposed Project site would have adequate internal circulation capacity, including entrance and exit routes to provide adequate unobstructed space for fire trucks and other emergency vehicles to gain access and to turn around. The proposed Project would not inhibit the ability of local roadways to continue to accommodate emergency response and evacuation activities. Therefore, the Project would result in a less-than-significant impact associated with emergency access. No further analysis in the EIR is warranted.

| Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|
|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|

### 3.4.18 - TRIBAL CULTURAL RESOURCES

Would the Project:

- a. Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:
- i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or
  - ii. A resource determined by the Lead Agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the Lead Agency shall consider the significance of the resource to a California Native American tribe.

☐☐☒☐☐☐☒☐

### Discussion

**Impact #3.4.18a(i) – Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?**

See also *Section 3.4.5 - Cultural Resources*.



Native American Tribal Consultation was completed for the Project in compliance with Assembly Bill 52 (AB 52), CEQA, and the Public Resources Code.

A Sacred Land Files search was requested from the Native American Heritage Commission (NAHC) to identify previously recorded sacred sites or cultural resources of special importance to tribes and provide contact information for local Native American representatives who may have information about the Project area. A response was received on June 20, 2022, indicating negative results that did not indicate the presence of any cultural places within the Project site and within a half-mile buffer around the Project site. The City of Hanford, as Lead Agency, sent consultation request letters pursuant AB 52 to the tribal groups on the NAHC list.

The Lead Agency has not received information from a local tribal group indicating that the Project would impact tribal cultural resources.

Although there is no obvious evidence of historical or archaeological resources on the Project site, there is the potential during construction for the discovery of cultural resources. Grading, trenching, and other ground-disturbing actions can damage or destroy these previously unidentified and potentially significant cultural resources within the Project area, including historical resources.

The General Plan EIR determined that new development could affect known and previously unknown archaeological resources. The EIR also included policies that specifically address sensitive archaeological resources and their protection, which include:

- Policy 045—Consult with appropriate Native American associations about potential archaeological sites in the beginning stages of the development review process.
- Policy 046—Require archaeological studies by a certified archeologist in areas of archeological potential significance prior to approval of development projects.
- Policy 047—Consult with the California Archaeological Inventory Southern San Joaquin Valley at California State University, Bakersfield about potential cultural sites on projects that could have an impact on cultural resources.
- Policy 048—Halt construction at a development site if cultural resources are encountered.

An inventory was conducted for the General Plan Update and this site was not listed as having a potential cultural resource. Compliance with General Plan Policies 045 through 048, as set forth above, is required to be included as a note on all plans and specs resulting from the Project. The notes would outline the necessary steps to be taken. The required notes will require the Project developer to adhere to the policies set forth in the Hanford General Plan pertaining to the preservation of Cultural Resources, including Policies 045 through 048.

These measures will be added to all engineered plans and specs that outline the necessary steps to be taken prior to the start of construction in the unlikely event construction of the Project inadvertently uncovers previously unknown tribal cultural resources. These measures require all work in the immediate vicinity of the discovery of cultural resources to halt until a qualified archaeologist can evaluate the find and make recommendations. In addition, prior to any ground disturbance, if the City of Hanford receives a request from a Native American tribal group, a surface inspection of the site will be conducted by a tribal monitor, and the tribe will have the opportunity to provide a Native American Monitor during ground-disturbing activities, dependent upon the availability and interest of the tribe.

With the implementation of these measures, impacts are considered to be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.18a(ii) – Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is a resource determined by the Lead Agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the Lead Agency shall consider the significance of the resource to a California Native American tribe?**

See discussion in *Section 3.4.5 - Cultural Resources* and Impact #3.14.18(i) above.

With the implementation of these measures, the Project would not cause a substantial adverse change in the significance of a tribal cultural resource that is a resource determined by the Lead Agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. The Project would result in a less-than-significant impact, and no further analysis in the EIR is warranted.

|  | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|
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### 3.4.19 - UTILITIES AND SERVICE SYSTEMS

Would the Project:

- |                                                                                                                                                                                                                                                                                     |                          |                          |                                     |                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| a. Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which would cause significant environmental effects? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b. Have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years?                                                                                                                          | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c. Result in a determination by the wastewater treatment provider that serves or may serve the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments?                                                    | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?                                                                                             | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?                                                                                                                                                                  | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

### Discussion

**Impact #3.4.19a – Would the Project require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which would cause significant environmental effects?**

The proposed Project will require the construction of new infrastructure to connect to the existing City utility infrastructure. This will include water, wastewater, and stormwater drainage connections. Additionally, the Project will include connections for electric power, natural gas, and telecommunications facilities. The installation of this infrastructure will not require any major upsizing or other offsite construction activities that would cause a

significant impact. The new infrastructure would be connected to the existing infrastructure that is adjacent to the Project site.

See Section #3.4.10- Hydrology and Water Quality for a discussion of water and stormwater disposal. The Project will not require the construction of new water or wastewater treatment facilities. Water usage for dust control during construction-related activities will be minimal due to the small footprint and short duration of construction-related activities of the proposed Project.

The proposed Project would be subject to the payment of any applicable connection charges and/or fees and extension of services in a manner that is compliant with the City's development standards, specifications, and policies. All applicable local, State, and federal requirements and best management practices will be incorporated into the construction and operation of the Project. Therefore, impacts would be considered less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.19b – Would the Project have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years?**

The City's water system is a groundwater system. The City is located within the Tulare Lake Hydrologic Region. Within that region, the City is located within the Tulare Lake Groundwater Subbasin, which transmits, filters, and stores water from the main San Joaquin Valley Groundwater Basin.

The City of Hanford maintains 203 miles of main lines (City of Hanford, 2021a). The City has established an ongoing program to replace undersized and aging water mains with larger lines that have the capability to deliver more water and consistent pressure as demand increases. The City has constructed six new deep-water wells, rehabilitated two deep wells, and eliminated six old wells with poor water quality. To use the most cost-efficient wells in the system as primary producers, a sophisticated computer control system was installed in 1992. The system is currently being upgraded and is anticipated to be fully functional in the spring of 2014. The City's water system consists of 13 supply wells, one standby well, three elevated storage tanks (all three of which are abandoned), one existing 0.5-million-gallon ground-level storage tank at the Industrial Park, 3.5-million-gallon ground-level storage tank, and a piping network for distributing the water throughout the City (two-million-gallon storage tank at Grangeville and Centennial Drive facility and one-million-gallon storage tank at the Fargo Avenue facility).

**Table 3.4.19-1  
Water Usage**

| <b>Project Component</b> | <b>Description</b>     | <b>Acre-Feet/Year</b> |
|--------------------------|------------------------|-----------------------|
| Low Density Residential  | 326 units/1,141 people | 159.76                |
|                          | <b>Total</b>           | <b>159.76</b>         |

Source: Appendix E

Under the 2020 City of Hanford Urban Water Management Plan indicated that the actual 2020 gallons per capita per day for water demand was calculated at 125 GPCD. Therefore, the water demand for the proposed Project would result in 142,625 gallons per day (1,141 people x 125 gallons/day/person = 142,625 gallons/day) or 159.76 acre-feet per year. In consideration of the UWMP projections for water availability, the long-term operational water demand is lower than the available water supply in the City of Hanford and would be able to be accommodated by City services.

It is important to note that the water usage for the General Plan-designated land uses for the Project site water usage was considered as an effect of General Plan implementation in the adopted General Plan EIR. Such water usage is approximately the same as that required for Project implementation.

Water usage for construction is anticipated to have minimal effect and development as indicated in the UWMP and prepared WSA within water demand projections of the City. Even on a short-term basis, such usage does not require the water volumes required for human occupancy of residences and other structures, waste disposal, and year-round landscaping. Water usage for construction dust control, trench and roadway soils compaction, landscaping, and related activities and usage is sporadic rather than long-term. Its quantification for analysis is difficult, but it clearly does not approximate or affect long-term water supply and demand projections.

Implementation of the Project will result in an increased demand for municipal water and potentially require an extension of the existing city water system. The Project will obtain its water from the City of Hanford's municipal water system. The site is within the City of Hanford Water Management Plan Service Area (City of Hanford, 2020). The City's groundwater has historically been capable of reliably meeting the City's water demands. It is projected that with the expected population growth when the Project is completed, the supply of water would meet the demand. Based on these estimates, the Project's construction and operations would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. Impacts would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.19c – Would the Project result in a determination by the wastewater treatment provider that serves or may serve the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments?**

Under the General Plan Update, it was determined that planned improvements and expansion development through various goals and policies would assist in providing wastewater services to the study area as development continues (City of Hanford, 2017). The current capacity of the WWTF is designed to accommodate 8.0 mgd, which is expected to provide adequate services to population growth for the foreseeable future, as noted in the General Plan.

Hanford's existing wastewater system includes a treatment facility south of Houston Avenue and east of 11th Avenue and 21 sanitary sewer lift stations at various locations throughout the city. The City has plans for pump replacements or upgrades at each of its locations within the next several years. The City's wastewater treatment facility provides for treatment, disposal, and reuse of effluent, which meets all of the State's discharge requirements for Hanford. The City's plant treats nearly 1.75 billion gallons of sewage each year. The facility is a major part of the City's effort to keep the environment clean and to provide a water resource for agricultural irrigation and reuse.

The latest treatment plant expansion was completed in 2004, increasing the City's treatment capacity from 5.5 to 8.0 mgd, equivalent to an additional service for 8,000 new single-family dwellings. The expansion included a new influent pump station, head works, grit removal, oxidation ditch, irrigation pump station, and several modifications to existing buildings and structures. An increase of 326 homes would not cause a significant impact to the existing wastewater treatment plant, and no further analysis in the EIR is warranted.

**Impact #3.4.19d – Would the Project Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?**

Kings Waste Recycling Authority (KWRA) will remove solid waste produced from construction and operation. The KWRA is a key element that helps the City of Hanford meet the State's recycling goals. Refuse from both municipal and commercial haulers is sorted at the KWRA facility to recover recyclable materials, including wood/green waste processed for compost, ferrous/metallic items, plastic and glass, newspaper, scrap paper, junk mail, magazines, paperboard, and cardboard. The KWRA does not operate an active landfill. Waste is hauled by transfer trucks from the Material Recover Facility (MRF) to the State permitted 320-acre Chemical Waste Management Landfill site in Kettleman Hills, approximately 45 miles west of the MRF. A combined MRF and Transfer Station (TS) was constructed near the old landfill southeast of Hanford. The MRF and TS facility includes a small but complete Household Hazardous Waste collection station. KWRA operates the MFR and TS as an enterprise function, with all revenue coming from solid waste disposal fees and the sale of recovered recyclable materials and compost. Responsibilities of the KWRA include the siting, permitting, financing, construction, and operation of landfills, and an MRF and TS. Additional responsibilities include all activities and waste diversion goals required by the State and the closure, post-closure monitoring, and liabilities of all identified former landfills in Kings County.

***Construction***

Non-hazardous construction refuse and solid waste would be collected and recycled or disposed of in a KWRA facility (City of Hanford, 2017). Any hazardous waste generated during construction would be disposed of at an approved location.

The Kettleman Hills Landfill has a maximum permit capacity of 18.4 million cubic yards (mcy) and a remaining capacity of 17.4 mcy and is expected to remain operational until at least 2030 (Cal Recycle, 2022).

The solid waste generated by construction activities is not expected to exceed the capacity of the landfill. Additionally, the construction period for the project is expected to be up to 12 months, and the landfill that would serve the project would be in operation during the construction period.

### ***Operation***

The Project would produce waste that would be collected and disposed of at the local landfill by a licensed waste hauler. Workers would generate small amounts of typical household refuse during maintenance visits. Some refuse will be sent for recycling as a part of the City's recycling efforts.

In compliance with federal, State, and local statutes and regulations related to solid waste, the Project would dispose of all waste generated onsite at an approved solid waste facility. The Project does not conflict with federal, State, or local regulations related to solid waste. The proposed Project would be served by a landfill with the sufficient permitted capacity to accommodate the Project's solid waste disposal needs in compliance with federal, State, and local statutes and regulations related to solid waste. Therefore, the Project would have a less-than-significant impact.

Cities generally measure their progress on waste reduction and reuse with a measurement called the "diversion rate." Hanford's diversion rate is 51 percent, which is about the statewide average. This level also meets the 51 percent required rate under State law since 2007. Therefore, the Project would have a less-than-significant impact, and no further analysis in the EIR is warranted.

### **Impact #3.4.19e – Would the Project comply with federal, state, and local statutes and regulations related to solid waste?**

The proposed Project would generate solid waste during construction and operation, thus requiring the consideration of waste reduction and recycling measures. The 1989 California Integrated Waste Management Act (AB 939) requires the City of Hanford to attain specific waste diversion goals. As stated above, the Kettleman Hills Landfill can accommodate solid waste generated by the proposed Project. Therefore, the proposed Project would not be expected to significantly impact the area. See also Impact #3.4.9f regarding emergency response landfills.

In addition, the California Solid Waste Reuse and Recycling Access Act of 1991, as amended, requires expanded or new development Projects to incorporate storage areas for recycling bins into the proposed Project design. The proposed Project would be required to comply with all federal, state, and local statutes and regulations related to the handling and disposal

of solid waste. The Project would result in a less-than-significant impact, and no further analysis in the EIR is warranted.



|                                                                                                                                                                                                                                                                    | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------------------|
| <b>3.4.20 - WILDFIRE</b>                                                                                                                                                                                                                                           |                                      |                                                                |                                     |                          |
| Would the Project:                                                                                                                                                                                                                                                 |                                      |                                                                |                                     |                          |
| a. Substantially impair an adopted emergency response plan or emergency evacuation plan?                                                                                                                                                                           | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose Project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?                                                       | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment? | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?                                                                            | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

### ***Discussion***

#### **Impact #3.4.20a – Would the Project substantially impair an adopted emergency response plan or emergency evacuation plan?**

See Impact #3.4.9f regarding emergency response. The proposed Project would not substantially impair an adopted emergency response plan or emergency evacuation plan regarding wildfire. Therefore, the Proposed project would have no impact regarding threshold a) above, and no further analysis is required.

#### **Impact #3.4.20b – Would the Project due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose Project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?**

The risk of wildfire is related to a variety of parameters, including fuel loading (vegetation), fire weather (winds, temperatures, humidity levels, and fuel moisture contents), and topography (degree of slope). Fuels such as grass are highly flammable because they have a high surface area to mass ratio and require less heat to reach the ignition point. Steep slopes

contribute to fire hazards by intensifying the effects of wind and making fire suppression difficult.

The Project site and surrounding area are relatively flat and without steep slopes. The site is located in a predominately urban area with some ongoing agricultural activities, which is not considered at significant risk of wildlife. Therefore, impacts would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.20c – Would the Project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?**

The Project includes the development of infrastructure (water, sewer, electrical power lines, and storm drainage) required to support the proposed residential uses. The Project site is surrounded by existing and future urban development. The Project would require installing or maintaining additional electrical distribution lines and natural gas lines to connect the residences to the existing utility grid. However, the Project would be constructed in accordance with all local and State regulations regarding power lines and other related infrastructure, as well as fire suppression requirements. Therefore, the Project would not exacerbate fire risk or result in temporary or ongoing environmental impacts and would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.20d – Would the Project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?**

The Project site is not located in or near an SRA or an LRA Fire Hazard Severity Zone. Thus the proposed Project would not expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. Therefore, the proposed Project would have no impact, and no further analysis is required.

| Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less than<br>Significant<br>Impact | No<br>Impact |
|--------------------------------------|----------------------------------------------------------------|------------------------------------|--------------|
|--------------------------------------|----------------------------------------------------------------|------------------------------------|--------------|

### 3.4.21 - MANDATORY FINDINGS OF SIGNIFICANCE

- |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                     |                          |                                     |                          |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|
| a. | Does the Project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory? | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b. | Does the Project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a Project are significant when viewed in connection with the effects of past Projects, the effects of other current Projects, and the effects of probable future Projects.)                                                                                                                                         | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| c. | Does the Project have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly?                                                                                                                                                                                                                                                                                                                                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |

### Discussion

**Impact #3.4.21a – Does the Project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?**

As evaluated in this IS, the Project would not substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; reduce the number or restrict the range of an endangered, rare, or threatened species; or eliminate important examples of the major periods of California history or prehistory including paleontological resources. Avoidance and minimization

measures have been recommended to be added to all engineered plans and specs. By implementing these measures related to cultural, paleontological, and biological resources. The incremental effects of the proposed Project would not contribute to a cumulative adverse impact on these resources. Therefore, the Project would have a less-than-significant impact. No further analysis in the EIR is warranted.

**Impact #3.4.21b - Does the Project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a Project are significant when viewed in connection with the effects of past Projects, the effects of other current Projects, and the effects of probable future Projects.)?**

The Project has the potential to contribute a cumulatively significant impact on the City’s circulation system and impacts related to VMT, as identified in this Initial Study. In addition, the Land Use and Planning section will evaluate the consistency of the proposed Project with City General Plan policies, zoning regulations, and LAFCo policies adopted for the purpose of avoiding or mitigating an environmental impact. Such impacts could occur as a result of full buildout of the Project. Therefore, the preparation of a focused EIR is warranted to evaluate the Project’s contribution to transportation impacts related to the City’s circulation system and VMT. The EIR will evaluate the proposed Project’s contribution to cumulative impacts in this area.

**Impact #3.4.21c - Does the Project have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly?**

The ways in which people can be subject to substantial adverse effects from projects include potential exposure to significant levels of local air pollutants; potential exposure to seismic and flooding hazards; potential exposure to hazardous materials; potential exposure to contamination from hazardous materials; and potential exposure to excessive noise levels. The risks from these potential hazards would be avoided or reduced to less-than-significant levels through compliance with existing laws, regulations, or avoidance and minimization measures placed on all engineered plans and specs. All direct and indirect impacts attributable to the Project were identified and determined to be less than significant, except for the Project’s contribution to transportation impacts related to the City’s circulation system and VMT, as well as consistency with General Plan policies, zoning regulations, and LAFCo policies.

The EIR will evaluate the proposed Project’s contribution to impacts in this area, and preparation of a focused EIR is warranted for this Project.

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- Gabrielle de Silva Myers, Senior Planner- Community Development Department

### ***QK***

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## NOTICE OF PREPARATION/INITIAL STUDY FOR A FOCUSED ENVIRONMENTAL IMPACT REPORT

Notice is hereby given that the City of Hanford will be the Lead Agency and will prepare a focused Environmental Impact Report (EIR) for the proposed Silicon Valley Ranch Residential Subdivision Project (Project). An Initial Study has been prepared along with this Notice of Preparation (NOP), which scopes out environmental topics for further review. The focused EIR will address the potential physical environmental effects of the proposed projects that have not been scoped out, as outlined in the California Environmental Quality Act (CEQA). The City is requesting comments on the scope and content of this focused EIR.

A scoping session will be held on Monday, July 8, 2024 at 5:00 p.m. at City Hall in the Training Room (319 N Douty Street, Hanford, CA 93230). The scoping session, which is part of the focused EIR process, is the time when the City solicits input from the public and agencies on specific topics they believe should be addressed in the environmental analysis. The scoping process is designed to enable the City to determine the scope and content of the focused EIR, identify the range of actions, and identify potentially significant environmental effects, alternatives, and mitigation measures to be analyzed in the focused EIR.

### ***Project Location***

The Project is located within the Sphere of Influence for the City of Hanford and is anticipated for annexation. The Project is adjacent to Hanford Armona Road to the north, between Greenbrier Drive to the east and 13th Avenue to the west, and encompasses approximately 88.9 acres (APN 011-040-008, 010, and 027). The Project site is located within the Hanford USGS Quad, Section 3, Township 19S, Range 21E, Mount Diablo Base and Meridian (MDB&M).

### ***Project Description***

The Project proposes to construct a 326-lot residential subdivision within the City of Hanford Sphere of Influence. The Project will be annexed into the City under separate application. An approximately 12.5-acre portion of the site at the northeast corner of the property is intended to be removed via a lot-line adjustment.

The Project will be developed with a 326-unit single-family subdivision, a 3.58-acre park, and a three-acre retention basin. Lots will range between 5,000 to 6,000 square feet and would be developed with single-family residential units. Associated utility and right-of-way infrastructure would also be developed in accordance with City of Hanford standards and regulations.

Approvals include:

- Approval of Tentative Tract Map #943
- Rezoning – Because the project site does not currently have a City of Hanford zoning designation, rezoning of the site is required. The project site would be rezoned to the R-L-5 zone.
- Annexation into the city limits by Kings County Local Agency Formation Commission (LAFCo)

Construction:

Development of the Project is anticipated to occur over a 12-month period. Construction equipment will vary over the course of development and would include the following:

- Excavators/earth-moving equipment
- Depending on foundation system, auger rig, or pile-driving rig
- All-terrain forklifts



- A man/material hoist
- Truck cranes and potentially a tower crane (pending permit approval)
- Concrete trucks
- Dump trucks
- Street sweepers/water trucks for dust control
- Construction delivery trucks (typically box trucks or flat beds)
- Small tools (generators, light plants, compactors, air compressors)

As mandated by the California Environmental Quality Act (CEQA), the public review period for this document was 30 days (CEQA Section 15073[b]). The public review period began on June 21, 2024 and ended on July 22, 2024. For further information, please contact Gabrielle de Silva Myers, 317 N. Douty Street, Hanford, CA 93230, (559) 585-2578 or visit:

<https://cityofhanfordca.com/1236/Current-Projects>

#### ***Mailing Address and Phone Number of Contact Person***

Gabrielle de Silva Myers, Senior Planner  
City Hall  
317 N. Douty Street  
Hanford, CA 93230  
(559) 585-2500

#### ***Findings***

As Lead Agency, the City of Hanford finds that the Project will have a significant effect on the environment. The Environmental Checklist (CEQA Guidelines Appendix G) or Initial Study (IS) (see *Section 3 - Environmental Checklist*) has identified one or more potentially significant effects on the environment. Pursuant to CEQA Guidelines Section 115064 (a)(1), an Environmental Impact Report (EIR) must be prepared if there is substantial evidence in light of the whole record that the proposed Project under review may have a significant effect on the environment and should be further analyzed to determine mitigation measures or project alternatives that might avoid or reduce project impacts to less-than-significant levels. The City of Hanford has determined that preparation of a focused Environmental Impact Report for the Project is necessary.



**Figure 3-1**  
**Project Site Area**

# DRAFT ENVIRONMENTAL IMPACT REPORT

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## CITY OF HANFORD SILICON VALLEY RANCH RESIDENTIAL PROJECT



OCTOBER 2024

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# DRAFT ENVIRONMENTAL IMPACT REPORT

## SILICON VALLEY RANCH RESIDENTIAL PROJECT



### Prepared for:

City of Hanford  
317 N. Douty Street  
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October 2024



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## ***List of Acronyms and Abbreviations***

|          |                                                 |
|----------|-------------------------------------------------|
| ADT      | Average Daily Trips                             |
| BMP      | best management practices                       |
| BSA      | Biological Survey Area                          |
| Caltrans | California Department of Transportation         |
| CARB     | California Air Resources Board                  |
| CCR      | California Code of Regulations                  |
| CDFW     | California Department of Fish and Wildlife      |
| CEQA     | California Environmental Quality Act            |
| CTC      | California Transportation Commission            |
| DTSC     | Department of Toxic Substances Control          |
| EBR      | eastbound right turn lane                       |
| EBTR     | eastbound through and right turn lane           |
| EIR      | Environmental Quality Act                       |
| ESA      | Environmental Site Assessment                   |
| FAR      | Floor Area Ratio                                |
| FMMP     | Farmland Monitoring and Mapping Program         |
| GHG      | Greenhouse gas                                  |
| HCM      | Highway Capacity Manual                         |
| HERO     | Human and Ecological Risk Office                |
| HHRA     | Human Health Risk Assessment                    |
| HJO      | Hanford Municipal Airport                       |
| HSR      | Highspeed Rail                                  |
| IS       | Initial Study                                   |
| IS/NOP   | Initial Study/Notice of Preparation             |
| ITE      | Institute of Transportation Engineers           |
| KART     | Kings Area Rural Transit                        |
| KCAG     | Kings County Association of Governments         |
| KCAPTA   | Kings County Area Public Transit                |
| LAFCo    | Local Agency Formation Commission               |
| LOS      | Level of Service                                |
| MDB&M    | Mount Diablo Base and Meridian                  |
| NHD      | National Hydrography Dataset                    |
| NOA      | Notice of Availability                          |
| NOC      | Notice of Completion                            |
| NOP      | Notice of Preparation                           |
| NPDES    | National Pollutant Discharge Elimination System |
| NWI      | National Wetlands Inventory                     |
| NWS      | National Weather Service                        |
| OCPs     | Pesticides and Organochlorine Pesticides        |
| OPR      | Office of Planning and Research                 |
| PEA      | Preliminary Endangerment Assessment             |
| PG&E     | Pacific Gas and Electric                        |

|         |                                                   |
|---------|---------------------------------------------------|
| PRC     | Public Resources Code                             |
| RHNA    | Regional Housing Needs Allocation                 |
| RTIP    | Regional Transportation Improvement Plan          |
| RTP     | Regional Transportation Plan                      |
| RTPA    | Regional Transportation Planning Agency           |
| RWQCB   | Regional Water Quality Control Board              |
| SB      | Senate Bill                                       |
| SCE     | Southern California Edison Company                |
| SCG     | Southern California Gas Company                   |
| SCS     | Sustainable Communities Strategy                  |
| sf      | square feet                                       |
| SJVAPCD | San Joaquin Valley Air Pollution Control District |
| SOI     | Sphere of Influence                               |
| SOV     | single-occupant vehicle                           |
| SR      | State Route                                       |
| STIP    | State Transportation Improvement Program          |
| SWPPP   | Stormwater Pollution and Prevention Plan          |
| TA      | Technical Advisory                                |
| TIA     | Traffic Impact Analysis                           |
| USEPA   | U.S. Environmental Protection Agency              |
| USFWS   | U.S. Fish and Wildlife Service                    |
| VMT     | Vehicle Miles Traveled                            |
| WSA     | Water Supply Assessment                           |

## **CHAPTER 1 - EXECUTIVE SUMMARY**

### **1.1 - Introduction**

This draft focused Environmental Impact Report (EIR) has been prepared in accordance with the California Environmental Quality Act (CEQA) to evaluate the potential environmental impacts associated with the construction of 326 single-family residences, internal roads, a 2.86-acre drainage retention basin, and a 3.58-acre park on an approximately 88.9-acre site (Project). An approximate 13.87-acre portion of the Project site is intended to be sectioned off from the Project via a lot line adjustment. The Project is located in the Sphere of Influence (SOI) of the City of Hanford, California, and an annexation of the land is proposed.

The purpose of this EIR is to inform public agency decision-makers, representatives of affected and responsible agencies, the public, and other interested parties of the potential environmental effects that may result from the Project. In addition to identifying potential environmental effects, this EIR also identifies methods by which these impacts can be mitigated, reduced, minimized, or avoided.

The study area for the analysis of the project and cumulative impacts is the Hanford city limits, the portions of Kings County located adjacent to the City. The applicable cumulative projections include growth projections from the Hanford General Plan and the Kings County General Plan.

### **1.2 - Project Summary**

#### **1.2.1 - PROJECT LOCATION**

The Silicon Valley Ranch Residential Development Project is located south of Hanford Armona Road, in the SOI of the City of Hanford. The Project encompasses approximately 88.9 acres (APN 011-040-008, 010, and 027) and is bordered by undeveloped and rural residential lands on the west and south; a church and undeveloped land to the north; and residential uses to the east. The Project is located within Section 3, Township 19 South, Range 21, East Mount Diablo Base and Meridian (MDB&M).

#### **1.2.2 - PROJECT DESCRIPTION**

The Project proposes to construct a 326-lot residential subdivision within the City of Hanford SOI. The Project will be annexed into the City under a separate application. An approximately 13.87-acre portion of the site at the northeast corner of the property is intended to be removed via a lot-line adjustment. The Project will be developed with a 326-unit single-family subdivision, a 3.58-acre park, and a 2.86-acre retention basin. Lots will range between 5,000 to 7,000 square feet and will be developed with single-family residential units. Associated utility and right-of-way infrastructure would also be developed in accordance with City of Hanford standards and regulations.

Approvals include:

- Approval of Tentative Tract Map #943.
- Prezoning – Because the Project site does not currently have a City of Hanford zoning designation, prezoning of the site is required. The Project site would be prezoned to the R-L-5 zone (Low Density Residential, 5,000 square feet).
- Annexation into the city limits by Kings County Local Agency Formation Commission (LAFCo).

Development of the Project is anticipated to occur over a 12-month period. Construction equipment will vary over the course of development and will include the following:

- Excavators/earth-moving equipment
- Depending on the foundation system, auger rig, or pile-driving rig
- All-terrain forklifts
- A man/material hoist
- Truck cranes and potentially a tower crane (pending permit approval)
- Concrete trucks
- Dump trucks
- Street sweepers/water trucks for dust control
- Construction delivery trucks (typically box trucks or flatbeds)
- Small tools (generators, light plants, compactors, air compressors)

### **1.3 - Lead Agency, Responsible Agency, and Trustee Agencies**

The Lead Agency for the proposed Project is the City of Hanford. The City is the public agency that has the principal responsibility for carrying out or disapproving the Project.

The responsible agencies are State and local public agencies other than the Lead Agency that have the authority to carry out or approve a project or that are required to approve a portion of a project for which the Lead Agency is preparing or has prepared an EIR or Negative Declaration. A complete list of agencies that may have authority as a responsible or trustee agency is listed in Chapter 2, *Introduction*.

### **1.4 - Summary of Project Objectives**

The Project has the following objectives:

- Provide a variety of housing opportunities with a range of styles, sizes, and values that will be designed to satisfy existing and future demand for quality housing in the area.
- Provide a sense of community and walkability within the development through the use of street patterns, parks/open space areas, landscaping, and other Project amenities.
- Create a successful and financially feasible Project by meeting the housing needs of the area.

- Provide a residential development that assists the City in meeting its General Plan and Housing Element requirements and objectives.

### **1.5 - Scope of the Environmental Impact Report**

The scope of this EIR is based on the Project description outlined in Chapter 2, *Project Description* and the Notice of Preparation (NOP) (Appendix A), focusing review of environmental resources that could result in potentially significant impacts on environmental resources. Chapter 4, *Environmental Impact Analysis*, identifies two resources related to the Project that were determined to be subject to potentially significant impacts in the NOP scoping process, and these are addressed in the following sections:

- 4.1 – Land Use Planning- Potential conflicts with an adopted land use plan, policy, or regulation
- 4.2 – Transportation and Traffic- all impacts

Sections 4.1 and 4.2 provide detailed discussions of the environmental setting, regulatory setting, methodology for impact assessment for the resource, impacts associated with the Project, and mitigation measures designed to reduce significant impacts where required and when feasible. Cumulative impacts also are discussed.

This EIR examines the potential direct and cumulative impacts of the proposed Project. These impacts were determined through a rigorous process mandated by CEQA in which existing conditions are compared and contrasted with conditions that would exist once the Project is implemented. The significance of each identified impact was determined using CEQA thresholds informed by local thresholds of significance. The following categories are used for classifying impacts.

- **Significant and Unavoidable:** Significant impacts that cannot be feasibly mitigated or avoided. No measures could be taken to avoid or reduce these adverse effects to achieve insignificant or negligible levels. Even after the application of feasible mitigation measures, the residual impact would be significant. If the Project is approved with significant and unavoidable impacts, decision-makers are required to adopt a Statement of Overriding Considerations pursuant to CEQA Section 15093 explaining why the benefits of the Project outweigh the potential damage caused by these significant unavoidable impacts.
- **Less than Significant with Mitigation:** Such impacts can be reduced to a less-than-significant level with feasible mitigation, which can include incorporating changes to the Project. If the proposed Project is approved with significant but mitigable impacts, decision-makers are required to make findings pursuant to CEQA Section 15091, stating that impacts have been mitigated to the maximum extent feasible and the residual impact would not be significant.
- **Less than Significant:** These adverse but less-than-significant impacts do not require mitigation, nor do they require findings to be made.

- **No Impact:** Such impacts are considered to not exist with the implementation of the proposed Project or have been found to not apply to the proposed Project.

## **1.6 - Notice of Preparation**

The contents of this EIR were established based on the findings in the NOP and attached materials, as well as public and agency input during the scoping period. The City issued a NOP on June 21, 2024, to request comments on the scope of the EIR. The NOP was published online at <https://www.cityofhanfordca.com/1236/Current-Projects>. The NOP was circulated to relevant agencies, community organizations, and interested individuals in the City. A public scoping workshop was held on July 8, 2024; a 30-day public comments period closed on July 22, 2024 (CEQA Guidelines §15082). A copy of the NOP and comments received during the NOP review period are included in Appendix A.

## **1.7 - Public Review of the Draft EIR**

Upon completion and circulation of this Draft EIR, the City of Hanford prepared and filed a Notice of Completion (NOC with the California Office of Planning and Research/State Clearinghouse to begin the public review period (Public Resources Code, Section 21161). Concurrent with the NOC, the City of Hanford distributed a Notice of Availability (NOA) in accordance with Section 15087 of the CEQA Guidelines. The NOA was mailed to the organizations and individuals who previously requested such a notice to comply with Public Resources Code Section 21092(b)(3). This Draft EIR was distributed to the California Office of Planning and Research/State Clearinghouse, published in the Fresno Bee newspaper to comply with Section 15087 of the State CEQA Guidelines, and was distributed to affected agencies, surrounding cities and municipalities, and all interested parties. During the public review period, this Draft EIR, including the appendices, will be available for review at the following location:

City of Hanford Community Development Department  
CIVIC CENTER BUILDING  
317 N Douty St, Hanford, CA 93230

In addition, the Draft EIR, including the appendices, will be available for review at the following City of Hanford website:

<https://www.cityofhanfordca.com/1236/Current-Projects>

Agencies, organizations, individuals, and all other interested parties not previously contacted or who did not respond to the NOP or attended the scoping meeting currently have the opportunity to comment on this Draft EIR during the 45-day public review period. Written comments on this Draft EIR should be addressed to:

Attn: Gabrielle Myers, Senior Planner  
City of Hanford Community Development Department  
CIVIC CENTER BUILDING  
317 N Douty St, Hanford, CA 93230

Email: gmyers@hanfordca.gov

## **1.8 - Environmental Impacts**

Section 15128 of the CEQA Guidelines requires that an EIR contain a statement briefly indicating the reasons that various, possible, new significant effects of a project were determined not to be significant and were therefore not discussed in detail in the EIR. The County has engaged the public to participate in the scoping of the environmental document.

The contents of this Draft EIR were established based on the NOP prepared in accordance with the CEQA Guidelines, as well as public and agency input that was received during the scoping process. The comments to the NOP are found in Appendix A of this document. Based on the findings of the NOP and the results of scoping, a determination was made that this EIR must contain a comprehensive analysis of Land Use and Planning as well as Transportation and Traffic related issues identified in Appendix G of the CEQA Guidelines.

### **1.8.1 - IMPACTS NOT FURTHER CONSIDERED IN THIS EIR**

As discussed in Appendix A, the Project was determined to have impacts with regard to each of the impact thresholds. Therefore, all environmental issues related to Land Use and Planning as well as Transportation and Traffic as they are presented in Appendix G of the CEQA Guidelines are analyzed further in this EIR.

### **1.8.2 - IMPACTS OF THE PROPOSED PROJECT**

#### **No Potential for Impacts to Occur**

The potential environmental effects of the Project and mitigation measures are discussed in detail in Chapter 4 of this EIR. After a full analysis, the following effects were determined to have no potential for impacts to occur:

#### **Aesthetics**

- Impact 4.1-1: Have a substantial adverse effect on a scenic vista
- Impact 4.1-2: Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway

#### **Agriculture and Forest Resources**

- Impact 4.2-2: Conflict with existing zoning for agricultural use or a Williamson Act contract

- Impact 4.2-3: Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), or timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Productions (as defined in Government Code Section 51104(g))
- Impact 4.2-4: Result in the loss of forest land or conversion of forest land to non-forest use

### **Biological Resources**

- Impact 4.4-5: Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance
- Impact 4.4-6: Conflict with provisions of an adopted habitat conservation plan, natural communities' conservation plan, or other approved local, regional, or State habitat conservation plan

### **Geology and Soils**

- Impact 4.7-8: Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater

### **Hazards and Hazardous Materials**

- Impact 4.9-7: Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires

### **Hydrology and Water Quality**

- Impact 4.10-6: In flood hazard, tsunami, or seiche zones, risk release of pollutants due to Project inundation

### **Land Use and Planning**

- Impact 4.11-1: Physically divide an established community

### **Mineral Resources**

- Impact 4.12-1: Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State
- Impact 4.12-2: Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan



## Noise

- Impact 4.13-3: For a Project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels

## Population and Housing

- Impact 4.14-2: Displace substantial number of existing people or housing necessitating the construction

## Recreation

- Impact 4.16-2: Include recreational facilities or require construction or expansion of recreational facilities that might have an adverse physical effect on the environment

## **Potential for Less than Significant Impacts**

Potential environmental effects of the Project and mitigation measures are discussed in detail in Chapter 4 of this EIR. After a full analysis, the following effects were determined to have less-than-significant impacts to occur:

## Aesthetics

- Impact 4.1-3: Substantially degrade the existing visual character or quality of public views of the site and its surroundings. (Public views are those that are experienced from a publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality
- Impact 4.1-4: Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area

## Agriculture and Forest Resources

- Impact 4.2-1: Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use
- Impact 4.2-5: Involve other changes in the existing environment which, because of their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use

### Air Quality

- Impact 4.3-1: Conflict with or obstruct implementation of the applicable air quality plan
- Impact 4.3-2: Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or State ambient air quality standard
- Impact 4.3-3: Expose sensitive receptors to substantial pollutant concentrations
- Impact 4.3-4: Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people

### Biological Resources

- Impact 4.4-1: Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service
- Impact 4.4-2: Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service
- Impact 4.4-3: Have a substantial adverse effect on State or federally Protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means
- Impact 4.4-4: Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites

### Cultural Resources

- Impact 4.5-1: Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5
- Impact 4.5-2: Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5
- Impact 4.5-3: Disturb any human remains, including those interred outside of dedicated cemeteries

## Energy

- Impact 4.6-1: Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during Project construction or operation
- Impact 4.6-2: Conflict with or obstruct a State or local plan for renewable energy or energy efficiency

## Geology and Soils

- Impact 4.7-1(i): Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving the rupture of a known earthquake fault as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42
- Impact 4.7-1(ii): Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking
- Impact 4.7-1(iii): Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction
- Impact 4.7-1(iv): Directly or indirectly cause potentially substantial adverse effects, including the risk of loss, injury, or death involving landslides
- Impact 4.7-2: Result in substantial soil erosion or loss of topsoil
- Impact 4.7-3: Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse
- Impact 4.7-4: Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property
- Impact 4.7-6: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature

## Greenhouse Gas Emissions

- Impact 4.8-1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment
- Impact 4.8-2: Conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases

## Hazards and Hazardous Materials

- Impact 4.9-1: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials
- Impact 4.9-2: Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment
- Impact 4.9-3: Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school
- Impact 4.9-4: Create a hazard to the public or the environment as a result of being located on a site that is included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5
- Impact 4.9-5: For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard or excessive noise for people residing or working in the Project area
- Impact 4.9-6: Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan

## Hydrology and Water Quality

- Impact 4.10-1: Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality
- Impact 4.10-2: Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin
- Impact 4.10-3(i): Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on- or off-site
- Impact 4.10-3(ii): Substantially alter the existing drainage pattern of the site or area, including the alteration of the course of a stream or river or through the addition of impervious surfaces, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site
- Impact 4.10-3(iii): Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would create or contribute runoff

water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantially additional sources of polluted runoff

- Impact 4.10-3(iv): Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would impede or redirect flood flows
- Impact 4.10-5: Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan

### Land Use Planning

- Impact 4.11-1: Cause a significant environmental impact due to a conflict with any land use plan, policy or regulation adopted for the purpose of avoiding or mitigating an environmental effect

### Noise

- Impact 4.13-1: Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance or applicable standards of other agencies
- Impact 4.13-2: Generation of excessive ground-borne vibration or ground-borne noise levels

### Population and Housing

- Impact 4.14-1: Induce substantial unplanned population growth in an area, either directly or indirectly

### Public Services

- Impact 4.15-1(i): Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts in order to maintain acceptable service ratios, response times, or other performance objectives for fire protection
- Impact 4.15-1(ii): Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts in order to maintain acceptable service ratios, response times, or other performance objectives for police protection services
- Impact 4.15-1(iii): Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or

physically altered governmental facilities, the construction of which could cause significant environmental impacts in order to maintain acceptable service Ratios, response times, or other performance objectives for school services

- Impact 4.15-1(iv): Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts in order to maintain acceptable service ratios, response times, or other performance objectives for park services
- Impact 4.15-1(v): Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts in order to maintain acceptable service ratios, response times, or other performance objectives for other public facilities

### Recreation

- Impact 4.16-1: Result in increased use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration would occur or be accelerated

### Transportation

- Impact 4.17-3: Substantially increase hazards due to a geometric design feature or incompatible uses
- Impact 4.17-4: Result in inadequate emergency access

### Tribal Cultural Resources

- Impact 4.18-1: Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is listed or eligible for listing in the California register of historical resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)
- Impact 4.18-2: Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in Subdivision (c) of Public Resources Code Section 5024.1.

### Utilities and Service Systems

- Impact 4.19-1: Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects
- Impact 4.19-2: Have sufficient water supplies available to serve the Project from existing entitlements and resources, or are new or expanded entitlements needed
- Impact 4.19-3: Result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments
- Impact 4.19-4: Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals
- Impact 4.19-5: Comply with federal, State, and local management and reduction statutes and regulations related to solid waste

### Wildfire

- Impact 4.20-1: Substantially impair an adopted emergency response plan or emergency evacuation plan
- Impact 4.20-2: Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose Project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire
- Impact 4.20-3: Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment
- Impact 4.20-4: Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes

### **Potential for Less than Significant Impacts to Occur with Incorporation of Mitigation Measures**

The potential environmental effects of the Project and mitigation measures are discussed in detail in Chapter 4 of this EIR.

## Land Use

- Impact 4.17-1: Cause a significant environmental impact due to a conflict with any land use plan, policy or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

## Transportation

- Impact 4.2-1 - Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?
- Impact 4.17-2: Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?

## Unavoidable Significant Adverse Impacts

Section 15126.2(b) of the CEQA Guidelines requires that the EIR describe any significant impacts, including those that can be mitigated but not reduced to less-than-significant levels. The potential environmental effects of the Project and proposed mitigation measures are discussed in detail in Chapter 4 of this EIR. The following environmental impacts were determined to be significant and unavoidable impacts (refer to Table 1-1, *Summary of Significant Impacts of the Project*).

**Table 1-1**  
**Summary of Significant Impacts of the Project**

| Resources              | Project Impacts                                                                                                                                                                                                                                                                                                                               | Cumulative Impacts                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Land Use<br>Impact 4.1 | <p>As evaluated in detail in Table 4.1-2, the Project is consistent with the goals and policies of the City of Hanford General Plan and Kings County General Plan.</p> <p>The Project is consistent with both Kings County and City of Hanford General Plan policy.</p> <p>Therefore, impacts are considered <i>less than significant</i></p> | <p>Potential land use impacts require evaluation on a case-by-case basis because of the interactive effects of a specific development and its immediate environment. Other projects being proposed in the area would similarly be analyzed for consistency with the pertinent City General Plan and Kings County General Plan goals and policies.</p> <p>Therefore, as proposed the Project would be consistent with the goals and policies of the City's General Plan and would therefore not contribute to a cumulatively considerable impact regarding land use. Cumulative impacts are <i>less than significant</i>.</p> |



| Resources                             | Project Impacts                                                                                                                                                                                                                                                                                                                                                                                | Cumulative Impacts                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Transportation and Traffic Impact 4.1 | The Project will impact the 12 <sup>th</sup> Avenue and Hanford Armona Road intersection. It is recommended that the existing eastbound right turn lane will change to an eastbound through and right turn lane. Implementation of MM 4.2-1 would allow the studied intersection to operate at an acceptable LOS under City LOS standards and reduce impacts to <i>less than significant</i> . | Cumulative impacts are assessed with the proposed Project and the 12 projects located within a one-half mile of the Project site as identified by the City of Hanford. Eleven of the 12 projects are entitled and either under construction or are anticipated to be under construction in the future. The projects that are entitled are included in and are consistent with the General Plan. Therefore, they are included in the KCAG travel demand model. The growth rates used to determine future traffic volumes would therefore reflect traffic from these projects. Cumulative impacts related to LOS would be <i>less than significant with mitigation measures incorporated</i> . |
| Transportation and Traffic Impact 4.2 | Due to the Project's location, it was determined that Vehicle Miles Travelled (VMT) would exceed the City of Hanford's adopted VMT per capita threshold. No applicable and feasible mitigation measures were identified to reduce VMT below thresholds. Therefore, impacts are considered <i>significant and unavoidable</i> .                                                                 | Because the proposed Project is determined to have a significant and unavoidable impact by exceeding VMT thresholds on a project level, the cumulative impacts would also be considered <i>significant and unavoidable</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

### Significant Cumulative Impacts

According to Section 15355 of the CEQA Guidelines, the term *cumulative impacts* "refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." Individual effects that may contribute to a cumulative impact may be from a single project or a number of separate projects. Individually, the impacts of a project may be relatively minor, but when considered along with impacts of other closely related or nearby projects, including newly proposed projects, the effects could be cumulatively considerable.

This EIR has considered the potential cumulative effects of the proposed Project. Impacts for the following issue areas have been found to be cumulatively considerable:

- Transportation and Traffic

This significant cumulative impact is discussed in the applicable section of Chapter 4, *Environmental Analysis*, of this EIR.

## **1.9 - Summary of Project Alternatives**

Below is a summary of the alternatives to the proposed Project, that have been considered but rejected as well as those alternatives that have been considered and evaluated in Chapter 6, *Alternatives to the Proposed Project*.

### **1.9.1 - ALTERNATIVES CONSIDERED AND REJECTED**

There are no Project alternatives that were considered and rejected.

### **1.9.2 - ALTERNATIVES CONSIDERED AND EVALUATED**

- *Alternative A (No Project Alternative)*. Under the No Project Alternative, the Project area would remain unchanged, and there would be no residential units or parks constructed.
- *Alternative B – Reduced Project Alternative*. This alternative would decrease the number of single-family residential houses from 326 to 242.
- *Alternative C – Multi-Family Alternative*. This alternative would replace the proposed single-family residential with multi-family apartments at a density of at least 14.5 dwelling units per gross acre (1,088 units). The Medium Density Residential was utilized to follow General Plan designations north of the Project site.
- *Alternative D– Different Sites Alternative*. This alternative would relocate the Project to a different site in order to be located nearer to corridor mixed use where a mix of commercial and office uses would be available in addition to be located closer to major transit corridors. This alternative would place the Project on the east side of the City, bounded by Lacey Boulevard to the south, 9 1/4 Avenue to the west, State Route 43 to the east, and Grangeville Boulevard to the north.

## **1.10 - Environmentally Superior Alternative**

CEQA requires that the City identify an Environmentally Superior Alternative. If the No Project Alternative is the Environmentally Superior Alternative, the City must identify an Environmentally Superior Alternative among the other alternatives considered in the EIR (CEQA Guidelines, Section 15126.6). This alternatives analysis includes three additional Project alternatives –Alternative B - Reduced Project, Alternative C - Multi-Family, and Alternative D - Different Site.

Based on the evaluation of the three alternatives, Alternative C – Multi-Family would reduce significant and unavoidable environmental impacts relating to VMT due to the increase in density. Alternative C increased density from 9.1 dwelling units/acre (du/ac) to 14.5 du/ac for a 13 percent VMT reduction, while fulfilling most of the objectives of the proposed Project and is therefore the Environmentally Superior Alternative.

### **1.11 - Growth Inducement**

The City of Hanford General Plan recognizes that certain forms of growth are beneficial, both economically and socially. Section 15126.2(d) of the CEQA Guidelines provides the following guidance on growth-inducing impacts: a project is identified as growth-inducing if it “could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment.”

Growth inducement can be a result of a new development that requires an increase in dwelling units or an increase in employment, removes barriers to development, or provides resources that lead to secondary growth. The Project would add new residential uses. It is anticipated that the construction workforce would commute to the site each day from local communities, and the majority would likely come from the existing labor pool as construction workers travel from site to site as needed. Construction staff not drawn from the local labor pool would stay in any of the local hotels in local communities.

With respect to residential land uses, the Project does not include the addition of any residentially designated uses, nor does it include typical elements that would directly or indirectly affect population or housing (i.e., extension of roads or other infrastructure). The Project would accordingly not directly result in population growth of the City.

Therefore, this Project would not result in a large increase in employment. In addition, the Project is situated in urbanized areas within the City of Hanford, where public services exist. The Project would accordingly accommodate planned growth and not induce unplanned growth.

With respect to removing barriers to development, such as by providing access to previously undeveloped areas, the Project is not anticipated to result in significant growth inducement. The Project does not include the construction of infrastructure that could provide for future residential development; it does not remove barriers to off-site development.

Although the Project accommodates planned economic growth at suitable locations, the net increase in population on the Project site would be less than significant.

**Table 1-2  
Comparison of Alternatives Impacts**

| <b>Environmental Resource</b>                                                                                                                                                                             | <b>Project</b>                                     | <b>Alternative<br/>A</b> | <b>Alternative<br/>B</b> | <b>Alternative<br/>C</b> | <b>Alternative<br/>D</b> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Land Use and Planning: Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect | Less than significant                              | Similar                  | Similar                  | Similar                  | Similar                  |
| Land Use and Planning: Cumulative Impacts associated with land use plan, policy, or regulation                                                                                                            | Less than significant                              | Similar                  | Similar                  | Similar                  | Similar                  |
| Transportation and Traffic: Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities                         | Less than significant with mitigation incorporated | Fewer                    | Fewer                    | Similar                  | Similar                  |
| Transportation and Traffic: Cumulative Impacts associated with LOS                                                                                                                                        | Less than significant with mitigation incorporated | Fewer                    | Fewer                    | Similar                  | Similar                  |
| Transportation and Traffic: Conflict or be Inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b)                                                                                             | Significant / Unavoidable                          | Fewer                    | Similar                  | Fewer                    | Similar                  |
| Transportation and Traffic: Cumulative Impacts associated with VMT                                                                                                                                        | Significant / Unavoidable                          | Fewer                    | Similar                  | Fewer                    | Similar                  |
| Meet Project Objectives?                                                                                                                                                                                  | Yes                                                | No                       | Yes                      | Yes                      | Yes                      |
| Reduce Any Significant and Unavoidable Impacts to No Impact or Less than Significant?                                                                                                                     | No                                                 | Yes                      | No                       | Yes                      | No                       |

### **1.12 - Irreversible Impacts**

Section 15126.2(c) of the CEQA Guidelines defines an irreversible impact as an impact that uses nonrenewable resources during the initial and continued phases of a project. Irreversible impacts can also result from damage caused by environmental accidents associated with a project. Irretrievable commitments of resources should be evaluated to ensure that such consumption is justified. Buildout of a project would commit nonrenewable resources during project construction and ongoing utility services during project operations. During project operations, oil, gas, and other nonrenewable resources would be consumed. Therefore, an irreversible commitment of nonrenewable resources would occur as a result of long-term project operations. However, assuming that those commitments occur in accordance with the adopted goals, policies, and implementation measures of the City of Hanford General Plan, as a matter of public policy, those commitments have been determined to be acceptable. The City of Hanford General Plan ensures that any irreversible environmental changes associated with those commitments will be minimized.

### **1.13 - Areas of Controversy**

No areas of controversy were identified through written agency, and public comments received during the scoping period. Public comments received during scoping are provided in Appendix A and summarized in Section 2.4 of Chapter 2, *Introduction*. In summary, the following issues were identified during scoping and are addressed in the appropriate sections of Chapter 4, *Environmental Analysis*:

- Land Use and Planning
  - Consistency with the General Plan
- Transportation
  - Level of Service
  - Vehicle Miles Traveled

### **1.14 - Issues to be Resolved**

Section 15123(b)(3) of the CEQA Guidelines requires that an EIR contain issues to be resolved, which includes the choices among alternatives and whether or how to mitigate significant impacts. The major issues to be resolved regarding the Project include decisions by the Lead agency as to whether or not:

- The Draft EIR adequately describes the environmental impacts of the Project.
- The recommended mitigation measures should be adopted or modified.
- Additional mitigation measures need to be applied.

### **1.15 - Executive Summary Matrix**

Table 1-3 below summarizes the impacts, mitigation measures, and the resulting level of significance after mitigation for the relevant environmental issue areas evaluated for the proposed project. Table 1-3 is intended to provide an overview; narrative discussions for the issue areas are included in the corresponding sections of this Draft EIR.

**Table 1-3  
Summary of Mitigation**

| <b>Impacts</b>                                                                                                                                                                            | <b>Mitigation Measures</b>                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>Level of Significance</b> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| <b>Section 4.1 Land Use and Planning</b>                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                              |
| 4.1-2: Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect | No mitigation is required.                                                                                                                                                                                                                                                                                                                                                                                                                           | Less than significant        |
| <b>Section 4.2 Traffic</b>                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                              |
| 4.2-1: Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities                                | <p>MM 4.17-1: The Project proponent or developer shall be required to pay their fair share costs for the needed improvements. This includes changing the 12<sup>th</sup> Avenue and Hanford Armona Road intersection eastbound right turn lane to an eastbound through lane and a right turn lane.</p> <p>The fair share cost for the improvement is calculated at 18.94% and shall be collected by the City of Hanford at the appropriate time.</p> | Less than significant        |
| 4.2-2: Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)                                                                                                  | No mitigation is required.                                                                                                                                                                                                                                                                                                                                                                                                                           | Significant and Unavoidable  |

## CHAPTER 2 - INTRODUCTION

### 2.1 - Overview

The City of Hanford (City) will be the Lead Agency pursuant to the requirements of the California Environmental Quality Act (CEQA) and will be responsible for preparing an Environmental Impact Report (EIR) pursuant to CEQA (Public Resources Code (PRC) Section 21000 et seq.) and the CEQA Guidelines. In accordance with Section 15082 of the CEQA Guidelines, the City published a Notice of Preparation (NOP). This EIR will be used by the City to evaluate the potential environmental impacts that could result from implementation of the Project and develop changes in the proposed Project and/or adopt mitigation measures that would address those impacts.

This EIR has been prepared pursuant to the following relevant State statutes and guidelines:

- CEQA (Public Resources Code, Section 21000 et seq.).
- CEQA Guidelines (California Code of Regulations, Title 14, Chapter 3, Section 15000 et seq.).

The overall purposes of the CEQA process are to:

- Identify the significant effects to the environment of a project, identify alternatives, and indicate the manner in which those significant effects can be avoided or mitigated.
- Provide for full disclosure of the project's environmental effects to the public, the agency decision-makers who will approve or deny the project, and responsible and trustee agencies charged with managing resources (e.g., wildlife, air quality) that may be affected by the project.
- Provide a forum for public participation in the decision-making process with respect to environmental effects.

### 2.2 - Purpose of This Environmental Impact Report

An EIR is a public informational document used in the planning and decision-making process. This project-level EIR will analyze the environmental impacts of the Project. The City of Hanford Planning Commission and City Council will consider the information in the EIR, including the public comments and staff response to those comments, during the public hearing process. As a legislative action, the final decision is made by the Board of Supervisors, who may approve, conditionally approve, or deny the Project. The purpose of an EIR is to identify:

- The significant potential impacts of the Project on the environment and indicate the manner in which those significant impacts can be avoided or mitigated.
- Any unavoidable adverse impact that cannot be mitigated.

- Reasonable and feasible alternatives to the Project that would eliminate any significant adverse environmental impacts or reduce the impacts to a less-than-significant level.

An EIR also discloses growth-inducing impacts; impacts found not to be significant; and significant cumulative impacts of the project when taken into consideration with past, present, and reasonably anticipated future projects.

CEQA requires an EIR that reflects the independent judgment of the Lead Agency regarding the impacts, the level of significance of the impacts both before and after mitigation, and mitigation measures proposed to reduce the impacts. A Draft EIR is circulated to responsible agencies, trustee agencies with resources affected by the project, and interested agencies and individuals. The purposes of public and agency review of a Draft EIR include sharing expertise, disclosing agency analyses, checking for accuracy, detecting omissions, discovering public concerns, and soliciting mitigation measures and alternatives capable of avoiding or reducing the significant effects of the project, while still attaining most of the basic objectives of the Project.

Reviewers of a Draft EIR are requested to focus on the sufficiency of the document in identifying and analyzing the possible impacts on the environment and ways in which the significant effects of the Project might be avoided or mitigated. Comments are most helpful when they suggest additional specific alternatives or mitigation measures that would provide better ways to avoid or mitigate significant environmental effects.

### **2.2.1 - ISSUES TO BE RESOLVED**

Section 15123(b)(3) of the CEQA Guidelines requires that an EIR contain issues to be resolved, which includes the choices among alternatives and whether or how to mitigate significant impacts. The major issues to be resolved regarding the Project include decisions by the Lead agency as to whether or not:

- The Draft EIR adequately describes the environmental impacts of the Project.
- The recommended mitigation measures should be adopted or modified.
- Additional mitigation measures need to be applied.

### **2.3 - Terminology**

To assist reviewers in understanding this EIR, the following terms are defined:

- *Project* means the whole of an action that has the potential for resulting in a direct physical change in the environment. or a reasonably foreseeable indirect physical change in the environment.
- *Environment* means the physical conditions that exist in the area, and which will be affected by a proposed project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance. The area involved is



where significant direct or indirect impacts would occur as a result of the Project. The environment includes both natural and manmade (artificial) conditions.

- *Impacts* analyzed under CEQA must be related to a physical change. Impacts are:
  - Direct or primary impacts that would be caused by a proposed project and would occur at the same time and place.
  - Indirect or secondary impacts that would be caused by a proposed project and would be later in time or farther removed in distance but would still be reasonably foreseeable. Indirect or secondary impacts may include growth-inducing impacts and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.
  - The California Supreme Court recently ruled that the environment's impact on a project falls outside the scope of CEQA except to the extent that impacts from a project exacerbate such impacts. This EIR includes the environment's impacts on a project for informational purposes and addresses the exacerbation component of the Court's decision.
- *Significant impact on the environment* means a substantial, or potentially substantial, adverse change in any of the physical conditions in the area affected by a proposed project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance. An economic or social change by itself is not considered a significant impact on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant.
- *Mitigation* consists of measures that avoid or substantially reduce a proposed project's significant environmental impacts by:
  - Avoiding the impact altogether by not taking a certain action or parts of an action.
  - Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
  - Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
  - Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
  - Compensating for the impact by replacing or providing substitute resources or environments.
- *Cumulative impacts* are two or more individual impacts that, when considered together, are considerable or that compound or increase other environmental impacts. The following statements also apply when considering cumulative impacts:
  - The individual impacts may be changes resulting from a single project or separate projects.

- The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over time.

This EIR uses a variety of terms to describe the level of significance of adverse impacts. These terms are defined as follows:

- *Less than significant.* An impact that is adverse but that does not exceed the defined thresholds of significance. Less-than-significant impacts do not require mitigation.
- *Significant.* An impact that exceeds the defined thresholds of significance and would or could cause a substantial adverse change in the environment. Mitigation measures are recommended to eliminate the impact or reduce it to a less-than-significant level.
- *Significant and unavoidable.* An impact that exceeds the defined thresholds of significance and cannot be eliminated or reduced to a less-than-significant level through the implementation of mitigation measures.

## 2.4 - Decision-Making Process

CEQA requires Lead Agencies to solicit and consider input from other interested agencies, citizen groups, and individual members of the public. CEQA also requires a project to be monitored after it has been permitted to ensure that mitigation measures are carried out.

CEQA requires the Lead Agency to provide the public with full disclosure of the expected environmental consequences of a proposed project and with an opportunity to provide comments. In accordance with CEQA, the following is the process for public participation in the decision-making process:

- **Notice of Preparation.** The City of Hanford prepared and circulated a Notice of Preparation (NOP) to responsible, trustee, and local agencies for review and comment on June 21, 2024. The NOP and responses to the NOP are included in Appendix A of this EIR. In conjunction with this public notice, a scoping meeting was held on July 8, 2024, at Hanford City Hall, located in the Training Room, 319 N Douty St, Hanford, CA 93230.
- **Draft EIR Preparation.** A Draft EIR is prepared, incorporating public and agency responses to the NOP and scoping process. The Draft EIR is circulated for review and comment to appropriate agencies and additional individuals and interest groups who have requested to be notified of EIR projects. Per Section 15105 of the CEQA Guidelines, the City of Hanford will provide for a 45-day public review period on the Draft EIR. The City will subsequently respond to each comment on the Draft EIR received in writing through a Response to Comments chapter in the Final EIR. The Response to Comments will be provided to each agency or person who provided

written comments on the EIR a minimum of 10 business days before the scheduled City Council hearing on the Final EIR.

- **Preparation and Certification of Final EIR.** The City of Hanford will consider the Final EIR and the Project, acting in an advisory capacity to the City Council. Upon receipt of the Planning Commission's recommendation, the City Council will also consider the Final EIR, and all public comments and take final action on the Project. At least one public hearing will be held by both the Planning Commission and City Council to consider the Final EIR, take public testimony, and then approve, conditionally approve, or deny the Project.

#### **2.4.1 - NOTICE OF PREPARATION (NOP)**

Pursuant to Section 15082 of the CEQA Guidelines, as amended, the City of Hanford circulated a NOP to the State Clearinghouse, public agencies, special districts, and members of the public for a public review period beginning June 21, 2024, and ending July 22, 2024. The purpose of the NOP is to formally convey that the City, as the Lead Agency, solicited input regarding the scope and proposed content of the EIR. The NOP and all comment letters are provided in Appendix A of this EIR.

#### **2.4.2 - SCOPING MEETING**

Pursuant to Section 15206 of the CEQA Guidelines, the Lead Agency is required to conduct at least one scoping meeting for all projects of Statewide, regional, or area-wide significance. The scoping meeting is for jurisdictional agencies and interested persons or groups to provide comments regarding, but not limited to, the range of actions, alternatives, mitigation measures, and environmental effects to be analyzed. The City of Hanford hosted a scoping meeting at 5:00 p.m. on July 8, 2024, at Hanford City Hall, located in Training Room, 319 N Douty St, Hanford, CA 93230.

#### **NOP and Scoping Meeting Results**

One comment letter was submitted during the scoping process. No oral comments were presented during the July 8, 2024, scoping meeting. Specific concerns raised in written and oral comments received during the NOP public review period are discussed below. The NOP and all comments received are included in Appendix A, along with the Summary of Proceedings from the scoping meeting.

#### **NOP Written Comments**

The City received one letter with substantive comments in response to the NOP. The comments are summarized in Table 2-1, *Summary of Written Comments on Notice of Preparation/Initial Study*.

**Table 2-1**  
**Summary of Written Comments on Notice of Preparation**

| <b>Commenter</b>                                                                 | <b>Summary of Comment</b>                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Federal Agencies                                                                 | No federal agencies submitted comments in response to the IS/NOP.                                                                                                                                                                                                                                                                                                          |
| California State Clearinghouse and Planning Unit<br>(letter dated July 5, 2019)  | Notifies reviewing agencies of their ability to review and provide comments on the NOP within 30 days of its receipt from the Lead Agency.                                                                                                                                                                                                                                 |
| California Department of Toxic Substances Control<br>(letter dated July 9, 2024) | The Department of Toxic Substances Control (DTSC) provided comments regarding the suitability of the site for residential use due to the past agricultural activities and potential past use of pesticides in addition to other potential contaminants. The comment letter is provided along with the IS/NOP in Appendix A. Responses to DTSC comments are provided below. |
| Local Agencies<br>Members of the Public                                          | No local agencies or members of the public submitted comments in response to the NOP.                                                                                                                                                                                                                                                                                      |

### 1. California Department of Toxic Substances Control

**Comment 1:** That all imported soil and fill materials should be tested to ensure any contaminants of concern are within DTSC's and U.S. Environmental Protection Agency (USEPA) Regional Screen Levels for the intended land use. To minimize the possibility of introducing contaminated soil and fill material there should be documentation of the origins of the soil or fill material and, if applicable, sampling be conducted to ensure that the imported soil and fill material meets the screening levels outlined in DTSC's Preliminary Endangerment Assessment (PEA) Guidance Manual for the intended land use. The soil sampling should include analysis based on the source of the fill and knowledge of the prior land use. Additional information can be found by visiting DTSC's Human and Ecological Risk Office (HERO) webpage.

**Response:** The Hanford Municipal Code requires that a grading plan be submitted for review and approval. The contents of the grading plan include specifications covering construction and material requirements, and a soils engineering report, which shall include data regarding the nature, distribution, and strength of existing soils; conclusions and recommendations for grading procedures; criteria for corrective measures when necessary; and opinions and recommendations covering adequacy of sites to be developed by the proposed grading. Should imported fill be necessary for the Project, the grading plan to be approved by the City will address the use of clean soil and fill pursuant to State and local requirements including Municipal Code and California Building Code standards.

**Comment 2:** When agricultural crops and/or land uses are proposed or rezoned for residential use, a number of contaminants of concern can be present. The Lead Agency shall

identify the amounts of Pesticides and Organochlorine Pesticides (OCPs) historically used on the property. If present, OCPs requiring further analysis are Dichlorodiphenyltrichloroethane, toxaphene, and dieldrin. Additionally, any level of arsenic present would require further analysis and sampling and must meet Human Health Risk Assessment Note Number 3 approved thresholds outlined in the PEA Guidance Manual. If they do not, remedial action must take place to mitigate them below those thresholds.

**Response:** A Phase I and Phase 2 Environmental Site Assessment (ESA) was prepared to determine if actual or potential environmental conditions involving the subjects are present and has been included as Appendix A in this Draft EIR (GeoTeck, Inc., 2024). Phase I ESA included a reconnaissance survey of the site and surrounding properties, interviews with appropriate representatives and regulatory agency personnel, and review of environmental databases, public records, and historical documents. The Phase I and 2 ESA also provided limited soils sampling to determine if any soil contamination was present. With respect to OCPs, five soil samples contained detectable concentrations of OCPs, however, those concentrations are below the EPA Regional Screening Level for residential soils. The concentration of the metal arsenic in all of the soil samples was above screening levels for residential soils, as determined by DTSC. However, the USEPA and the DTSC have acknowledged that naturally occurring arsenic in southern California typically exceeds the maximum screening level, with levels recorded up to 12 mg/kg in many areas (Human Health Risk Assessment (HHRA) Note Number 11 - Southern California Ambient Arsenic Screening Level). The test results for all of the soil samples are below the typically detected levels of arsenic in the southern California area. Therefore, the Phase I and 2 ESA concluded that no recognized environmental condition or concern is present on the site.

**Comment 3:** Additional contaminants of concern may be found in mixing/loading/storage area, drainage ditches, farmhouses, or any other outbuildings and should be sampled and analyzed. If smudge pots had been routinely utilized, additional sampling for Polycyclic Aromatic Hydrocarbons and/or Total Petroleum Hydrocarbons may be required.

**Response:** The Phase I and 2 ESA site investigation concluded that no recognized environmental condition in connection with the subject site had been identified. The survey of the site and historic document research did not reveal any contamination of concern related to historic use of the site for agriculture.

### ***IS/NOP Oral Comments***

The City received no oral comments in response to the NOP at the scoping meeting. The comments are summarized in Table 2-2, *Summary of Oral Comments on Notice of Preparation*.

**Table 2-2**  
**Summary of Oral Comments on Notice of Preparation**

| <b>Commenter</b>   | <b>Summary of Comment</b>                                                          |
|--------------------|------------------------------------------------------------------------------------|
| Federal Agencies   | No federal agencies commented in response to the NOP during the scoping meeting.   |
| State Agencies     | No local agencies commented in response to the NOP during the scoping meeting.     |
| Local Agencies     | No local agencies commented in response to the NOP during the scoping meeting.     |
| Interested Parties | No interested parties commented in response to the NOP during the scoping meeting. |

## **2.5 - Availability of the Draft EIR**

This Draft EIR is being distributed directly to agencies, organizations, and interested groups and persons for comment during a 45-day formal review period in accordance with Section 15087 of the CEQA Guidelines. This Draft EIR and the full administrative record for the Project, including all studies, is available for review during normal business hours Monday through Friday at the City of Hanford Community Development Department, located at:

City of Hanford Community Development Department  
 CIVIC CENTER BUILDING  
 317 N Douty St, Hanford, CA 93230

## **2.6 - Format and Content**

This Draft EIR addresses the potential environmental effects of the Project and was prepared following input from the public and the responsible and affected agencies, through the EIR scoping process, as discussed previously. The contents of this Draft EIR were established based on the findings in the NOP and public and agency input. Based on the findings of the NOP, a determination was made that an EIR was required to address potentially significant environmental effects on the following resources:

- Land Use and Planning
- Transportation

### **2.6.1 - REQUIRED EIR CONTENT AND ORGANIZATION**

The content and organization of this Draft EIR are designed to meet the requirements of CEQA, the CEQA Guidelines, and the Kern County CEQA Implementation Document, as well as to present issues, analysis, mitigation, and other information in a logical and understandable way. This Draft EIR is organized into the following sections:

- Chapter 1, “*Executive Summary*,” provides a Project description and a summary of the environmental impacts and mitigation measures.

- Chapter 2, *“Introduction,”* provides CEQA compliance information, an overview of the decision-making process, organization of the EIR, and a responsible and trustee agency list.
- Chapter 3, *“Project Description,”* provides a description of the location, characteristics, objectives, and the relationship of the Project to other plans and policies.
- Chapter 4, *“Environmental Setting, Impacts, and Mitigation Measures,”* contains a detailed environmental analysis of the existing conditions, project impacts, mitigation measures, and unavoidable adverse impacts.
- Chapter 5, *“Consequences of Project Implementation (Mandatory CEQA Sections),”* presents an analysis of the Project’s cumulative and growth-inducing impacts and other CEQA requirements, including significant and unavoidable impacts and irreversible commitment of resources.
- Chapter 6, *“Alternatives,”* describes a reasonable range of alternatives to the Project that could reduce the significant environmental effects that cannot be avoided.
- Chapter 7, *“Responses to Comments,”* is reserved for responses to comments on this Draft EIR.
- Chapter 8, *“Organizations and Persons Consulted,”* lists the organizations and persons contacted during the preparation of this Draft EIR.
- Chapter 9, *“Preparers,”* identifies persons involved in the preparation of the Draft EIR.
- Chapter 10, *“Bibliography,”* identifies reference sources for the Draft EIR.
- *“Appendices”* provide information and technical studies that support the environmental analysis contained within the Draft EIR.

The analysis of each environmental category in Chapter 4 is organized as follows:

- *“Introduction”* provides a brief overview of the purpose of the section being analyzed with regard to the Project.
- *“Environmental Setting”* describes the physical conditions that exist at this time and that may influence or affect the topic being analyzed.
- *“Regulatory Setting”* provides State and federal laws, the City of Hanford General Plan (GP) goals, policies, and implementation measures that apply to the topic being analyzed.
- *“Impacts and Mitigation Measures”* discusses the impacts of the Project in each category, including direct, indirect, and cumulative impacts, presents the

determination of the level of significance, and provides a discussion of feasible mitigation measures to reduce any impacts.

## **2.7 - Responsible and Trustee Agencies**

Projects or actions undertaken by the Lead Agency, in this case, the City of Hanford, may require subsequent oversight, approvals, or permits from other public agencies in order to be implemented. Other such agencies are referred to as “*responsible agencies*” and “*trustee agencies*.” Pursuant to Sections 15381 and 15386 of the CEQA Guidelines, as amended, responsible agencies and trustee agencies are defined as follows:

- A “*responsible agency*” is a public agency that proposes to carry out or approve a project, for which a Lead Agency is preparing or has prepared an EIR or Negative Declaration. For the purposes of CEQA, the term “*responsible agency*” includes all public agencies other than the Lead Agency that have discretionary approval power over the project (Section 15381).
- A “*trustee agency*” is a State agency having jurisdiction by law over natural resources affected by a project that is held in trust for the people of the State of California (Section 15386).

The various public, private, and political agencies and jurisdictions with a particular interest in the Project include, but are not limited to, the following:

### **2.7.1 - LOCAL AGENCIES**

- Pacific Gas and Electric (PG&E)
- San Joaquin Valley Air Pollution Control District (SJVAPCD)
- County of Kings
- Southern California Edison Company (SCE)
- Southern California Gas Company (SCG)

### **2.7.2 - STATE AGENCIES**

- California Air Resources Board (CARB)
- California Department of Transportation (Caltrans)
- California Department of Fish and Wildlife (CDFW)
- California Integrated Waste Management Board
- Department of Water Resources
- Governor’s Office of Planning and Research
- Regional Water Quality Control Board (RWQCB), Central Valley Region
- Department of Toxic Substances Control (DTSC)
- California Environmental Protection Agency



### **2.7.3 - FEDERAL AGENCIES**

- U.S. Environmental Protection Agency (USEPA)
- U.S. Fish and Wildlife Service (USFWS)

### **2.8 - Incorporation by Reference**

In accordance with Section 15150 of the CEQA Guidelines to reduce the size of the report, the following documents are hereby incorporated by reference into this Draft EIR and are available for public review at the City of Hanford Community Development Department.

- City of Hanford 2035 General Plan Update
- City of Hanford 2035 General Plan Update Master EIR
- City of Hanford Subdivision Ordinance
- City of Hanford Zoning Ordinance
- City of Hanford Housing Element
- City of Hanford Vehicle Miles Travelled Threshold and Implementation Guidelines

### **2.9 - Sources**

This Draft EIR is dependent upon information from many sources. Some sources are studies or reports that have been prepared specifically for this document. Other sources provide background information related to one or more issue areas that are discussed in this document. The sources and references used in the preparation of this Draft EIR are listed in Chapter 10, *Bibliography*, and are available for review during normal business hours at the:

City of Hanford Community Development Department  
CIVIC CENTER BUILDING  
317 N Douty St, Hanford, CA 93230

## CHAPTER 3 - PROJECT DESCRIPTION

### 3.1 - Project Overview

This Environmental Impact Report (EIR) has been prepared to identify and evaluate potential environmental impacts associated with the construction of 326 single-family residences, internal roads, a 2.86-acre drainage retention basin, and a 3.58-acre park on an approximately 88.9-acre site (Project). An approximately 13.87-acre portion of the site at the northeast corner of the property is intended to be removed via a lot-line adjustment. The Project is within the City of Hanford's Sphere of Influence (SOI) but will be annexed into the City (Figure 3-1 - *Regional Location*; Figure 3-2 - *Project Area*).

### 3.2 - Project Location and Environmental Setting

#### 3.2.1 - REGIONAL SETTING

The City of Hanford (City) is located 30 miles south of the City of Fresno and 20 miles west of the City of Visalia in the northern portion of Kings County, California. Kings County is one of eight counties that comprise the San Joaquin Valley, which is bound on the west by the Coast Range Mountains, on the east by the Sierra Nevada, on the south by the Tehachapi Mountains, and on the north by the Sacramento River Delta area. Kings County is bordered by Monterey County to the west, Tulare County to the east, Kern County to the south, and Fresno County to the north. Like much of the greater San Joaquin Valley, Kings County has remained predominantly an agricultural area. There are four incorporated cities in Kings County. Hanford is the largest of the four cities in physical size and population. Figure 3-1 provides the regional location of Hanford.

#### 3.2.2 - LOCAL SETTING

The City has a total area of approximately 17 square miles and, as of January 1, 2020, had a population of 57,339 residents, which was about 38 percent of the total population of Kings County. The City's elevation is approximately 249 feet above mean sea level, and the topography of Hanford is relatively flat, indicative of the floor of the San Joaquin Valley where the City resides. Armona, Home Garden, and Grangeville are unincorporated communities located near Hanford. The Naval Air Station Lemoore is located 16 miles west of Hanford. Santa Rosa Rancheria, the reservation of the Santa Rosa Indian Community, is located eight miles southwest of Hanford.

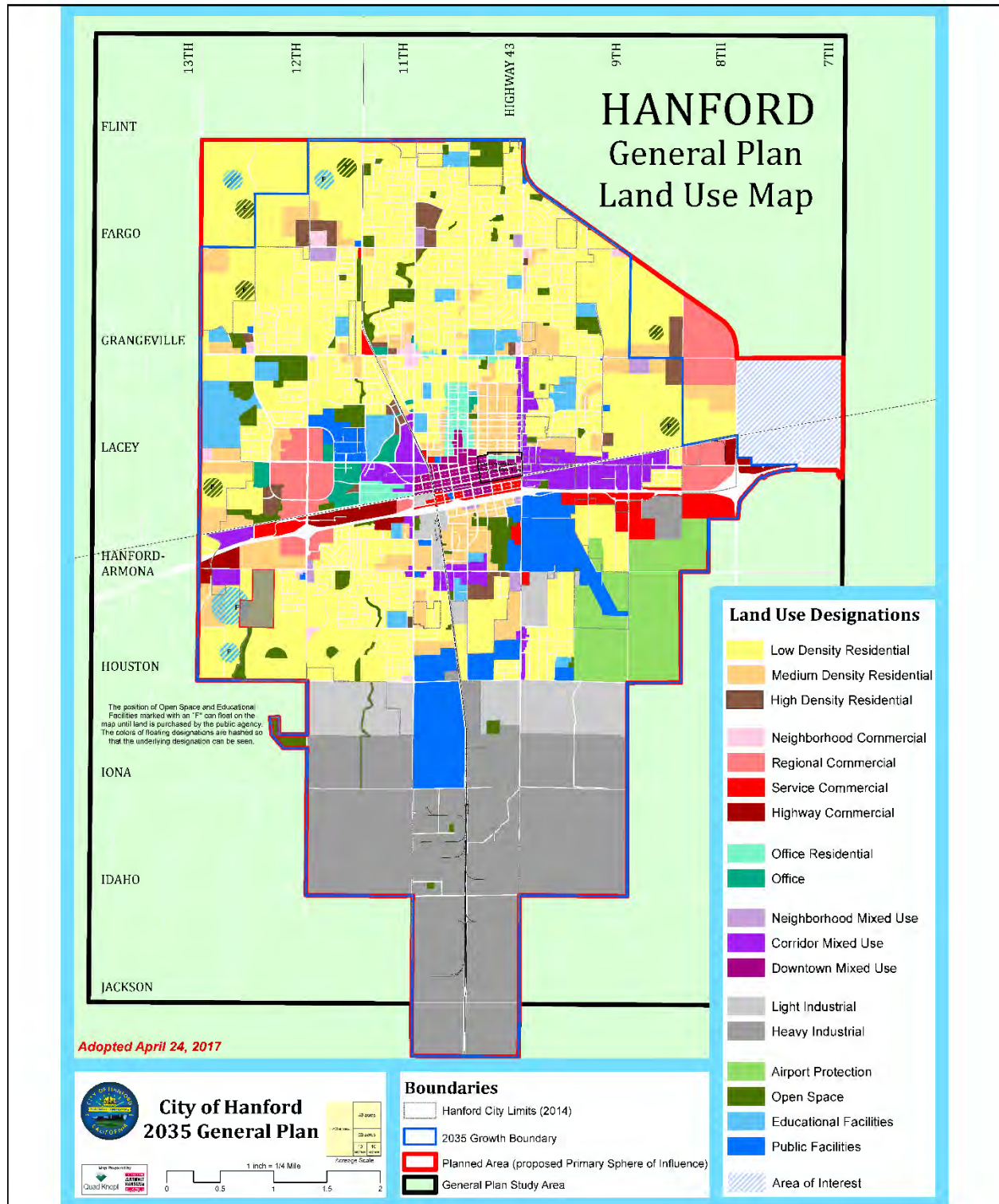
Figure 3-3 shows the current city limits. This figure also shows the City's current Primary Sphere of Influence (SOI) and Secondary SOI. A Primary SOI is defined as "the probable physical boundaries and service area of a local agency." The City's Primary SOI represents an assumption of the City's probable future physical boundaries and service. A Secondary SOI serves as an identification of the "areas of interest" between local agencies.











**Figure 3-3**  
**Sphere of Influence**

### **3.2.3 - PROJECT LOCATION**

The Silicon Valley Ranch Residential Development Project is located south of Hanford Armona Road, in the sphere of influence of the City of Hanford. The Project encompasses approximately 88.9 acres (APN 011-040-008, 010, and 027) and is bordered by undeveloped and rural residential lands on the west and south; a church and undeveloped land to the north; and residential uses to the east. The Project is located within Section 3, Township 19 South, Range 21 East Mount Diablo Base and Meridian (MDB&M). Figure 3-3 shows the location of the Project in relation to the city limits.

### **3.3 - Project Objectives**

State CEQA Guidelines require that the EIR project description include a statement of the objectives of the proposed Project. The primary objectives of the Project are to:

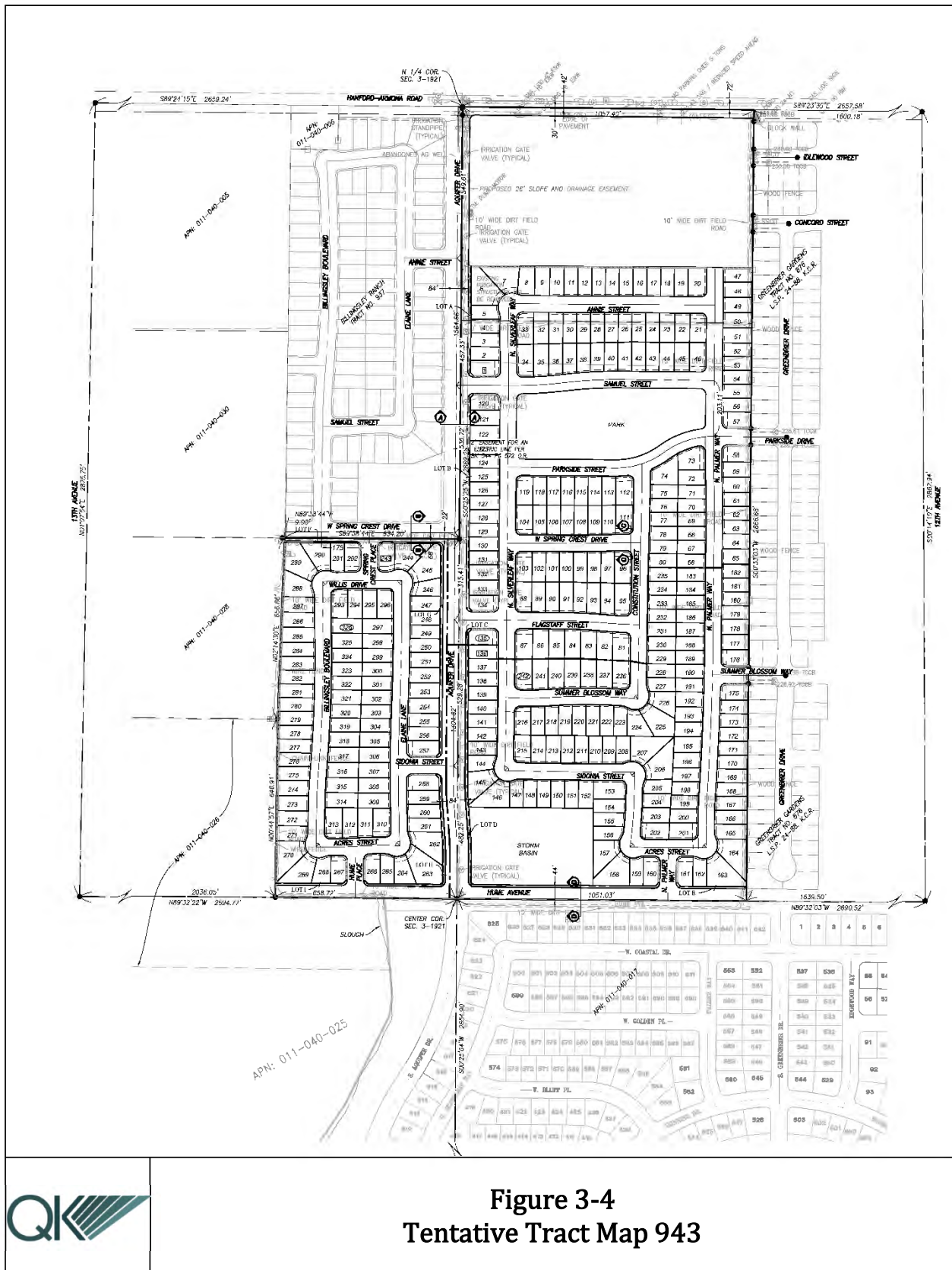
- Provide a variety of housing opportunities with a range of styles, sizes, and values that will be designed to satisfy existing and future demand for quality housing in the area.
- Provide a sense of community and walkability within the development through the use of street patterns, parks/open space areas, landscaping, and other Project amenities.
- Create a successful and financially feasible Project by meeting the housing needs of the area.
- Provide a residential development that assists the City in meeting its General Plan and Housing Element requirements and objectives.

### **3.4 - Proposed Project**

The Project proposes to construct a 326-lot residential subdivision within the City of Hanford Sphere of Influence (Figure 3-4). The Project will be annexed into the City under a separate application. An approximately 13.87-acre portion of the site at the northeast corner of the property is intended to be removed via a lot-line adjustment. The Project will be developed with a 326-unit single-family subdivision, a 3.58-acre park, and a 2.86-acre retention basin. Lots will range between 5,000 to 7,000 square feet and will be developed with single-family residential units. Associated utility and right-of-way infrastructure would also be developed in accordance with City of Hanford standards and regulations.

In order for the Project to be constructed, approval of the following actions is required:

- Approval of Tentative Tract Map 943.
- Prezoning – Because the Project site does not currently have a City of Hanford zoning designation, prezoning of the site is required. The Project would be prezoned to the R-L-5 (Low Density Residential, 5,000 square feet).
- Annexation into the city limits by Kings County Local Agency Formation Commission (LAFCo).



Development of the Project is anticipated to occur over a 12-month period. Construction equipment will vary over the course of development and will include the following:

- Excavators/earth-moving equipment
- Depending on the foundation system, auger rig, or pile-driving rig
- All-terrain forklifts
- A man/material hoist
- Truck cranes and potentially a tower crane (pending permit approval)
- Concrete trucks
- Dump trucks
- Street sweepers/water trucks for dust control
- Construction delivery trucks (typically box trucks or flatbeds)
- Small tools (generators, light plants, compactors, air compressors)

### **3.5 - Entitlements Required**

The City is the Lead Agency for the proposed Project, consistent with State CEQA Guidelines Section 15065(b). As such, this EIR will be used by the City to evaluate the potential environmental impacts that could result from implementation of the Project and develop changes in the proposed Project, and/or adopt mitigation measures that would address those impacts.

The Hanford City Council will consider the adoption of the Project after certification of the Final EIR. Pursuant to CEQA Guidelines Section 15093, the decision-makers must “*balance, as applicable, the economic, legal, social, technological, or other benefits of a proposed project against its unavoidable environmental risks when determining whether to approve the project. If the specific economic, legal, social, technological, or other benefits of a proposed project outweigh the unavoidable adverse environmental effects, the adverse environmental effects may be considered ‘acceptable’*”

If the City, as the Lead Agency, approves the proposed Project and significant, unavoidable environmental impacts have been documented, a Statement of Overriding Considerations must be written, which shall state the specific reasons to support the approval based on the Final EIR and/or other information in the record.

Implementation of the proposed Project would require the following regulatory and/or legislative actions by the Hanford City Council, following the recommendation from the Planning Commission:

- Certify the Final EIR.
- Consider and adopt Findings and a Statement of Overriding Considerations, as necessary.
- Approve Tentative Tract Map 943.
- Adopt an Ordinance approving the rezoning of the site as R-L-5 Low-Density Residential.



- Initiate Annexation by filing an application with Kings County LAFCo.

### **3.5.1 - OTHER RESPONSIBLE AGENCIES**

Future activities related to development may require consideration and approval from a variety of agencies, who will be CEQA responsible or trustee agencies in this environmental process. The specific responsible agencies may vary depending upon the nature of the planned activity, location, and the resources impacted by the proposed subdivision. A preliminary list of potentially responsible and trustee agencies is provided below:

- Kings County LAFCo
- San Joaquin Valley Air Pollution Control District (SJVAPCD)

### **3.6 - Cumulative Projects**

CEQA requires that an EIR evaluate cumulative impacts. Cumulative impacts are the Project's impacts combined with the impacts of other related past, present, and reasonably foreseeable future projects. As set forth in the CEQA Guidelines, the discussion of cumulative impacts must reflect the severity of the impacts, as well as the likelihood of their occurrence; however, the discussion need not be as detailed as the discussion of environmental impacts attributable to the Project alone. As stated in CEQA, Public Resources Code, Section 21083(b) (2), "a project may have a significant effect on the environment if the possible effects of a project are individually limited but cumulatively considerable."

According to the CEQA Guidelines:

Cumulative impacts refer to two or more individual effects, which, when considered together, are considerable and compound or increase other environmental impacts.

- The individual effects may be changes resulting from a single project or a number of separate projects.
- The cumulative impact from several projects is the change in the environment, which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time (California Code of Regulations [CCR], Title 14, Division 6, Chapter 3, §15355).

In addition, as stated in the CEQA Guidelines, it should be noted that:

The mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed Project's incremental effects are cumulatively considerable (CCR, Title 14, Division 6, Chapter 3, Section 15064[I][5]).

Cumulative impact discussions for each environmental topic area are provided at the end of each technical analysis contained within Chapter 4, under *Impacts and Mitigation Measures*. The cumulative impacts discussions explain the geographic scope of the area affected by each cumulative effect (e.g., immediate project vicinity, city, county, watershed, or air basin). The geographic area considered for each cumulative impact depends upon the impact that is being analyzed. For example, in assessing aesthetic impacts, the pertinent geographic study area is the vicinity of the areas of new development under the proposed plan from which the new development can be publicly viewed and may contribute to a significant cumulative visual effect. In assessing macro-scale air quality impacts, on the other hand, all development within the air basin contributes to regional emissions of criteria pollutants, and basin-wide projections of emissions are the best tool for determining the cumulative effect.

Section 15130 of the CEQA Guidelines permits two different methodologies for the completion of the cumulative impact analysis:

- The 'list' approach permits the use of a list of past, present, and probable future projects producing related or cumulative impacts, including projects both within and outside the city.
- The 'projections' approach allows the use of a summary of projections contained in an adopted plan or related planning document, such as a regional transportation plan, or in an EIR prepared for such a plan. The projections may be supplemented with additional information such as regional modeling.

This EIR uses the list approach and below is a list of similar projects within a 1.5-mile radius of the Project site. The project list provided by the Lead Agency includes the following projects.

1. Live Oak North (Tract 902, 99 single-family units, under construction)
2. Billingsly (Tentative Tract 927, 95 single-family units, not under construction)
3. Stonehaven (Tentative Tract 940, 82 single-family units, not under construction)
4. Live Oak West (Entitled under Live Oak Master Plan and Tentative Tract 909, 642 units, not under construction)
5. Live Oak East (Tract 865 and 881, 448 single-family units, under construction)
6. Live Oak East II (Tentative Tract 912, 94 single-family units, not under construction)
7. Fairfield Inn Hotel (80 units, under construction)
8. The Enclave (Tract 915, 66 single-family units, under construction)
9. The Village (100 multi-family units, under construction)
10. 216-unit apartment complex (not under construction)
11. Proposed medical mixed use complex (not entitled)
12. Monte Vista (40 high-density single-family units, under construction)

The following provides a summary of the cumulative impact scope for each impact area:

- Land Use and Planning: The analysis of the proposed Project addresses cumulative impacts related to consistency with the City of Hanford General Plan and other applicable planning documents.
- Transportation and Traffic: The analysis of the proposed Project addresses cumulative impacts to the transportation network in Hanford and the surrounding area.

## CHAPTER 4 - ENVIRONMENTAL IMPACT ANALYSES

### 4.1 - Land Use and Planning

#### 4.1.1 - INTRODUCTION

This section describes the affected environment and regulatory setting of the proposed Project for impacts that may affect land use and planning. It also describes the environmental and regulatory setting and discusses the need for mitigation measures where applicable. The information is based, in part, on a review of the proposed Project's consistency with the City of Hanford General Plan, City Zoning Ordinance, Kings County General Plan, and Kings County LAFCo regulations.

#### 4.1.2 - ENVIRONMENTAL SETTING

##### ***On-Site Land Uses***

The Project site has historically been used as an agricultural field and does not contain any structures.

As discussed in the scoping Initial Study (IS) prepared with the NOP (Appendix A), the site contains both Prime Farmland and Farmland of Statewide Importance as designed by the California Department of Conservation, Farmland Mapping and Monitoring Program (FMMP) (California Department of Conservation, 2022). The Project site is located within the Sphere of Influence (SOI) of the City and is designated for Low Density Residential under their General Plan. The Project site is not subject to a Williamson Act Land Use contract.

The Project site is located in Flood Zone X, an area of minimal flood hazard, and outside of the 100-year flood zone. Furthermore, the Project site is not located within the Special Flood Hazard Area (Zone A, V, A99, AE, AO, AH, VE, or AR). Per the National Hydrography Dataset (NHD) and National Wetlands Inventory (NWI), the Project site does not contain a delineated wetland, water feature, or potentially jurisdictional water body or wetland that may fall under the jurisdiction of federal and/or State regulatory agencies.

The Kings County General Plan states that there are limited excavation operations of soil, sand, and gravel for commercial use within Kings County. In 2009, the County had only one surface mining permit for a non-active gravel operation, and two agricultural reclamation sites that were fully reclaimed (Kings County, 2010). The City of Hanford General Plan further states that there have been no efforts to attempt extraction of mineral resources within or near the General Plan Planning Area. The Project site does not contain a mineral resource extraction area. Per the California Department of Conservation Well Finder online mapping application, the Project site does not contain an active or abandoned well site.

As shown in Table 4.1-1, *Project Site and Surrounding Land Uses and Zoning Classifications*, the Project site has a Kings County General Plan designation of Limited Agriculture, 10 acres, and a City of Hanford General Plan designation of Low Density Residential. The Project

proposes to annex into the City of Hanford's city limits and will be rezoned to the R-L-5 (Low Density Residential, 5,000 square feet) to be consistent with the City General Plan designation.

### **Surrounding Land Uses**

Land uses in the region and immediate area of the Project site consist of agricultural operations and residential development. Immediately north of the Project site is agricultural land improved with row crops and single-family residences, and the Koinonia Church. The area west and south of the Project site consists of rural residential and undeveloped land. Land to the east is mainly developed with single-family residential. The nearest residences are located along the eastern boundary of the Project site.

As summarized in Table 4.1-1, surrounding land uses are designated Low Density Residential, Medium Density Residential, and Open Space under the City of Hanford General Plan Land Use Map. A small portion west of the Project site is located outside of the city limits and is designated as Limited Agriculture under the Kings County General Plan.

**Table 4.1-1  
Project Site and Surrounding Land Uses and Zoning Classifications**

|                             | <b>Existing Land Use</b>               | <b>Existing General Plan Designation</b>                                                 | <b>Existing Zoning</b>                                                         |
|-----------------------------|----------------------------------------|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| Project Site                | Undeveloped Land                       | Low Density Residential                                                                  | Prezone: R-L-5                                                                 |
| <b>Surrounding Land Use</b> |                                        |                                                                                          |                                                                                |
| North                       | Agriculture, Rural Residential, Church | Medium Density Residential                                                               | R-M (Medium Density Residential)                                               |
| East                        | Single-Family Residential              | Low Density Residential                                                                  | R-L-5 (Low Density Residential, 5,000 square feet)                             |
| South                       | Undeveloped                            | Open Space and Low Density Residential                                                   | R-L-5 and CO (Conservation)                                                    |
| West                        | Rural Residential, Undeveloped         | Limited Agriculture, 5 Acres (Kings County)<br>Low Density Residential (City of Hanford) | R-L-5 (City of Hanford)<br>AL10 (Limited Agriculture, 10 acres) (Kings County) |

#### **4.1.3 - REGULATORY SETTING**

This section summarizes the Land Use and Planning policies, laws, and regulations that apply to the proposed Project. This information provides context for the impact discussion related to the Project's consistency with applicable regulatory conditions.

**Federal**

No federal plans, policies, regulations, or laws are applicable for this issue area.

**State**

There are no State regulations for this issue area.

**Regional****KINGS COUNTY LOCAL AREA FORMATION COMMISSION (LAFCo)**

Kings County LAFCo is responsible for coordinating logical and timely changes in local governmental boundaries, conducting special studies that review ways to reorganize, simplify and streamline governmental structure and preparing a SOI for each city and special district within each county. The Commission's efforts are directed to seeing that services are provided efficiently and economically while ensuring that agricultural and open-space lands are protected. A SOI is a planning boundary outside of an agency's legal boundary that designates the agency's probable future boundary and service area. The purpose of the SOI is to ensure the provision of efficient services while discouraging urban sprawl and premature conversion of agricultural and open space lands by preventing overlapping jurisdictions and duplication of services. A secondary SOI has been established by Kings County LAFCo which is beyond the primary SOI and includes additional territory that serves only as an area of planning interest to the city. When a city desires to alter its boundary and add additional contiguous land into its jurisdictional control through an annexation, the city must first obtain LAFCo approval.

The Kings County LAFCo adopted standards to review proposals of all changes or organization or reorganization of cities and special districts and are reflected in the Kings County LAFCo Policies and Procedure Manual. Both favorable and unfavorable factors are listed, and the existence of favorable or unfavorable factors should not decide approval or denial; however a substantial number of favorable, or unfavorable, factors may be the determining factor of approval or denial of the proposal.

***Standards for Annexation to Cities and Special Districts Providing Urban Services******1. Favorable Factors:***

- a. Proposal would eliminate or reduce in size, islands, near islands or other gross distortions of existing city and district boundaries.*
- b. The proposed area is urban in character and should be provided with municipal or urban type services.*
- c. The proposed area is close to urban development and municipal type services and would enhance its potential of full development.*
- d. The proposal is required by a governmental agency for annexation of its publicly owned property.*

- e. *The proposed annexation conforms to the adopted general plan.*
- f. *The boundaries are definite and certain.*
- g. *The proposed area is consistent with the sphere of influence.*
- h. *Request for annexation comes with the consent of all land owners as shown on the last assessment roll.*

2. *Unfavorable Factors:*

- a. *The proposed annexation would create extensive corridors or peninsulas extending into an unincorporated area, and would cause further distortion of existing city boundaries.*
- b. *The proposed annexation would result in a premature intrusion of urbanization into an agricultural area.*
- c. *Extension of city services is financially infeasible for the foreseeable future.*
- d. *The area is presently rural or agricultural and no urban development appears to be imminent.*
- e. *The proposed annexation is motivated by land speculation or other motives not in the public's best interest.*
- f. *Boundaries of the proposal do not include appropriate area or are otherwise improperly drawn.*
- g. *The proposal is inconsistent with adopted sphere of influence and adopted general plan.*

## **Local**

### **KINGS COUNTY GENERAL PLAN**

The 2035 Kings County General Plan provides a future vision for the county and guides the physical growth and development of the unincorporated portion of Kings County. The Kings County General Plan is also intended to conserve the County's resources through the year 2035 in a manner consistent with the goals of the people of Kings County. The Kings County General Plan includes the following goal, objective and policies regarding annexation.

**LU Goal E1:** Urban Fringe areas continue to allow existing uses, while land remains intended for probable future urban growth and expansion of Cities where urban level municipal services are provided.

**LU Objective E1.1:** Require new development in city fringe areas (except a single-family house or secondary dwelling unit on an existing lot) to annex to the city, and encourage existing developed fringe areas to annex to the City where the City the closest and most logical municipal service provide.

**LU Policy E1.1.1:** Require urban growth to be contiguous to existing urban development and annex to a city in order to ensure coordinated urban growth according to that City's General Plan policies. Commercial and industrial development may be considered for development

in the County when annexation is not feasible or practical but must develop public improvements to City standards.

### ***CITY OF HANFORD GENERAL PLAN***

The Hanford General Plan serves as the community's guide for the continued development, enhancement, and revitalization of the City of Hanford. The General Plan includes the following policies related to land use and annexations that are relevant to this analysis:

### ***Chapter 3 Land Use and Community Design***

**Goal L1:** A well planned community that grows in an organized fashion.

**Goal L3:** Limitation of urban sprawl-style development patterns in new growth areas.

**Goal L4:** Adequate land available to meet housing needs for all citizens through the year 2035.

**Goal L5:** Stable, high quality neighborhoods with housing integrated with schools, parks, and availability of everyday commercial goods and services.

**Goal L6:** A wide range of housing choices that insure opportunities for a variety of age groups, lifestyles, and income levels.

**Goal L7:** Residential densities that encourage both compact and infill development.

**Goal L30:** Preservation and enhancement of Hanford's unique character and achievement of an optimal balance of residential, commercial, industrial, public, and open space land uses.

**Goal L32:** Improvement in Hanford's quality of life through use of practical design principles and standards.

**Goal L38:** Revitalized Arterial corridors that accommodate a mix of nonresidential and residential uses that generate activity and economic vitality and improve the visual character.

### ***Policy L1 Planned Area Boundary***

Designate a Planned Area Boundary to serve as the limits of the area to be planned for urban development.

### ***Policy L2 2035 Growth Boundary***

Designate a 2035 Growth Boundary to serve as the limits of the area to be developed with urban uses during the 2015 to 2035 planning period. Locate the 2035 Growth Boundary along major roadways and other natural or manmade physical features that can serve as a physical boundary between urban and agricultural uses.



***Policy L3 Developable Land Inventory***

Include enough land within the 2035 Growth Boundary to meet the project land needs to accommodate growth through the year 2035, along with a 35% market flexibility factor that acknowledges existing constraints to development of some parcels.

***Policy L4 New Development within Boundary***

Approve new urban development only within the 2035 Growth Boundary.

***Policy L6 Agriculture and the Urban Fringe***

Recognize and protect the right of agricultural uses within the growth boundary to exist and continue to operate in proximity to new development on the fringes of the City.

***Policy L7 Primary Sphere of Influence***

Support and pursue an amendment of the City of Hanford's Primary Sphere of Influence to be coterminous to the Planned Area Boundary.

***Policy L15 Initiation of Annexations***

Consider initiation of annexation of land into the City of Hanford only when the following criteria are met:

1. The land is within the Primary Sphere of Influence.
2. The capacity of the water, sewer, fire, school, and police services are adequate to service the area to be annexed, or will be adequate at the time that development occurs.
3. Land for development within the city limits is insufficient to meet the current land use needs.
4. The territory to be annexed is contiguous to existing developed areas.

***Policy L18 Compatibility with Surrounding Neighborhoods***

Ensure that new development is compatible with existing and surrounding neighborhoods.

***Policy L24 Availability of Infrastructure***

Ensure that new residential developments have sufficient urban infrastructure and public facilities to accommodate the number and type of development being proposed.

***Policy L27 Mix of Densities in Neighborhoods***

Encourage mixing of residential densities and lot sizes within neighborhoods.

***Policy L29 Agriculture***

Recognize the right of agriculture to exist and continue to operate in proximity to the new residential development on the fringes of the city. Deed restrictions may be required which inform future residents of the right of agriculture to continue within the limits of the law without interference or protect from nearby property owners.

***Policy L33 Size of Lots in the Low Density Residential Land Use Designation***

While it is recognized that existing lot sizes of 10,000 to 40,000 square feet are included in this designation, new individual lot sizes shall range from 5,000 to 10,000 square feet in size. Under Planned Unit Development provisions, smaller lot sizes at higher densities may be permitted when clustered around shared open space amenities or through density bonus policies.

***Policy L114 Services and Facilities***

Include easily accessible services and facilities within each neighborhood to meet the daily needs of neighborhood residents. Most residents should live within a ½ mile walking distance of schools, parks and retail services.

***Policy L120 Encroachment of Incompatible Land Uses***

Protect residential neighborhoods from the encroachment of land uses that may have a negative impact on the residential living environment.

***Policy L147 Hanford-Armona Road Residential and Mixed Use Development***

Encourage residential and mixed use developed in the Hanford-Armona Road Corridor between 10<sup>th</sup> and 13<sup>th</sup> Avenues.

***Chapter 4 Transportation and Circulation******Policy T1 Coordination of Circulation and Land Use***

Develop a circulation network that reinforces the desired land use pattern for Hanford, as identified in the land use element.

***Policy T29 Maximum Level of Service***

Maintain a peak hour Level of Service E on streets and intersections within the area bounded by Highway 198, 10<sup>th</sup> Avenue, 11<sup>th</sup> Avenue, and Florinda Avenue, inclusive of these streets. Maintain a peak hour Level of Service D on all other streets and intersections with the Planned Growth Boundary.

***Policy T33 Street Improvements and Priorities***

Prioritize street improvements with emphasis on current and forecasted service levels.

***Policy T36 Traffic Impact Fees***

Periodically review and update the traffic impact fee program to ensure new development contributes its fair share of funding for new street, intersection, and highway improvements.

***Policy T40 Pedestrian and Bicycle Placemaking***

Promote pedestrian and bicycle improvements that improve connectivity between neighborhoods, provide opportunities for distinctive neighborhood features, and foster a greater sense of community.

***Policy T48 Traffic Calming***

Consider the use of traffic calming designs such as roundabouts, bulb-outs, and other traffic calming designs, where they will improve the operation or LOS of a street.

***Policy T49 Subdivision Connectivity***

Design subdivision to maximize connectivity both internally and with other surrounding development.

***Policy T51 Alternative Design Standards***

Consider alternative roadway design standards for new residential and mixed use development for future streets that may include:

- Narrower street widths on local roadways.
- Smaller turning radii geometrics on street intersections to improve safety for pedestrians.
- Tree lined streets in parkways between the curb and sidewalk.
- Roundabouts in lieu of traffic signals where appropriate conditions exist to maximize intersection efficiency, maintain continuous traffic flow, and reduce accident severity.

***Policy T64 Bicycle Network Master Planning***

Maintain a Bicycle Master Plan to coordinate existing and planned infrastructure to support, encourage and promote bicycle transportation, with effective connections to downtown, major shopping areas, mixed use neighborhoods, community facilities, schools, parks, and employment areas.

***Policy T70 Pedestrian Connections***

Increase connectivity through direct and safe pedestrian connections to public amenities, neighborhoods, village centers and other destinations throughout the city.

**Chapter 5 Open Space, Conservation and Recreation**

**Goal 08: The equitable distribution of parks throughout the community that are well designed, accessible, and integrated with the surrounding neighborhood.**

**Goal 09 Parks provided at a combined ratio of 2.5 acres per 1,000 residents.**

**Policy 01 Boundary between Urban and Agricultural Uses**

Utilize the Planned Area Boundary as the long term boundary line between urban uses and agricultural uses and prohibit non-agricultural development outside the Planned Area Boundary.

**Policy 02 Agricultural Buffer**

Coordinate land use policies and designations with Kings County to provide for a buffer between the urban area of Hanford and the surrounding unincorporated communities.

**Policy 04 Interim Agricultural Use**

Retain existing agricultural areas as an interim use inside the Planned Area Boundary and support agricultural operations until such time that the areas are needed for logical urban expansion.

**Policy 012 Soil Erosion**

Require new development to implement measures to minimize soil erosion related to construction.

**Policy 015 Energy-efficient Design Features**

Require that new development incorporate energy-efficient design features for HVAC, lighting systems, and insulation meet or exceed California Code of Regulations Title 24.

**Policy 016 Vegetation to Conserve Energy**

Encourage the use of native and drought tolerant shade trees and vines on southern and western exposure building walls as an energy conservation technique.

**Policy 021 Water Conservation Ordinance**

Actively enforce and periodically update the City Water Conservation Ordinance.

**Policy 022 Water Conservation Efforts**

Actively encourage water conservation by both agricultural and urban water users.

***Policy 024 Drought Tolerant Vegetation***

Promote the use of drought-tolerant vegetation to minimize water consumption by providing information to developers, designers, and homebuyers.

***Policy 025 Recharge Basins***

Protect existing groundwater recharge basins and natural and manmade sloughs and seek the establishment of new basins within and around Hanford.

***Policy 028 Water Availability in Emergencies***

Ensure that public and private water facilities have adequate capacity to supply emergency needs.

***Policy 029 Water Conservation Measures for New Development***

Encourage new development projects to include water conservation measures, including use of graywater, reclaimed, or recycled water for landscaping, water-conserving plumbing fixtures and appliances, and water-efficient landscapes.

***Policy 030 Storm Water Pollution Prevention***

Implement the NPDES Stormwater Permit and for those properties exempt from the Permit, require a storm water pollution prevention plan, including use of best management practices, to control erosion and sedimentation during construction.

***Policy 031 Provision of Open Space Areas***

Preserve and enhance natural open space areas.

***Policy 035 Impacts from Development***

Ensure that potential impacts to biological resources and sensitive habitat are carefully evaluated when considering development projects.

***Policy 036 Nonnative Invasive Species***

Manage or eliminate nonnative invasive species from City-owned property and open space.

***Policy 037 Mature Trees***

Promote the preservation of existing mature trees and encourage the planting of appropriate shade trees

***Policy 038 Native Tree Species and Drought Tolerant Vegetation***

Encourage the planting of native tree species and drought-tolerant vegetation.

***Policy 039 Endangered Wildlife and Habitat***

Establish programs in connection with environmental review processes that protect endangered wildlife and their habitats.

***Policy 040 Sensitive Wildlife***

Work with state, federal, and local agencies on the preservation of sensitive wildlife species in the City.

***Policy 044 Flexible Land Use Standards***

Adopt flexible land use and design standards to allow the adaptive reuse of historic buildings with a variety of economically viable uses, while minimizing impacts to the historic value and character of sites and structures.

***Policy 046 Archaeological Site Consultation***

Consult with appropriate Native American associations about potential archaeological sites in the beginning stages of the development review process.

***Policy 047 Archaeological Site Study***

Require archaeological studies by a certified archaeologist in areas of archaeological potential significance prior to approval of development projects.

***Policy 048 Cultural Site Consultation***

Consult with the California Archaeological Inventory Southern San Joaquin Valley at California State University, Bakersfield about potential cultural sites on projects that could have an impact on cultural resources.

***Policy 049 Cultural Site Discovery***

Halt construction at a development site if cultural resources are encountered unexpectedly during construction.

***Policy 050 Parks, Recreation, and Open Space Master Plan***

Prepare and periodically update a Parks, Recreation, and Open Space Master Plan to plan for new growth identified in the land use element.

***Policy 057 Neighborhood Parks***

Establish neighborhood parks generally between 2 and 5 acres in size at locations easily accessed by residents of the neighborhood.

***Policy 058 Neighborhood Parks Service Area***

Neighborhood parks shall have a general service area of approximately ½ mile radius, and situated to avoid patrons having to cross arterial streets, railroad lines and major waterways.

***Policy 064 Park Visibility***

Parks shall be designed to promote a safe and clean environment for recreation. New neighborhoods shall be designed so that common side and rear residential property lines with parks are minimized and visibility of parks from public streets is maximized.

***Policy 065 Development Impact Fee for Parks***

Adopt and periodically update a park development impact fee to fund new neighborhood and community parks needed to serve new growth.

***Chapter 6 Public Facilities and Services***

**Goal P1:** Adequate water quality and quantity to meet existing and planned needs.

**Goal P2:** Adequate wastewater collection and treatment to meet both existing and planned needs.

**Goal P3:** Adequate and effective stormwater collection and disposal to meet both existing and planned needs.

**Goal P5:** Adequate solid waste disposal capacity to meet existing and future demands.

**Goal P12:** Adequate provision of school facilities to serve projected growth.

***Policy P1 Adequate Water Services***

Provide adequate water services to support the level of development identified in the land use element.

***Policy P3 Water Supply and Fire Flow Availability***

Condition approval of new development projects and water service extensions on the availability of adequate water supply and the ability to meet domestic and fire flow needs of the area.

***Policy P7 New Water Infrastructure***

Require developers to fund and install new water distribution facilities to service their new developments.

***Policy P8 Impact Fees for Water Facilities***

Adopt and periodically update a water impact fee to fund community-wide water supply, treatment, and distribution infrastructure needed to serve new growth.

***Policy P9 Sufficient Collection and Treatment***

Ensure provision of sufficient wastewater collection and treatment facilities to support the existing and new growth identified in the land use element.

***Policy P13 New Wastewater Infrastructure***

Require developers to fund and install new wastewater collection facilities to service their new development.

***Policy P14 Impact Fees for Wastewater Facilities***

Adopt and periodically update a wastewater impact fee to fund community-wide wastewater collection and treatment needed to serve new growth.

***Policy P15 Adequate Storm Water Services***

Provide adequate storm water drainage infrastructure to support the level of development identified in the land use element.

***Policy P17 Adequate Storm Water Drainage Improvements Availability***

Condition approval of development projects on the provision of adequate storm water drainage improvements.

***Policy P21 New Storm Water Drainage Infrastructure***

Require developers to fund and install new storm water drainage facilities to service their new developments.

***Policy P22 Impact Fees for Wastewater Facilities***

Adopt and periodically update a wastewater drainage impact fee to fund area-wide storm water drainage needed to serve new growth.

***Policy P24 New Development Run-Off Volumes***

Require new development to discharge storm water runoff at volumes no greater than the capacity of any portion of the existing downstream system by utilizing detention or retention or other approved methods, unless the project is providing drainage infrastructure in accordance with an adopted drainage plan.



***Policy P37 Impact Fees for Police Facilities***

Require new development to provide funding to meet the cost of providing vehicles, equipment, and structures, to meet the needs for new population growth.

***Policy P46 Building Design for Safety***

Encourage building designs that help to reduce crime and improve resident safety.

***Policy P47 Lighting for Safety***

Facilitate public safety through the placement and design of outdoor lighting, while respecting the privacy of surrounding properties.

***Policy P52 Impact Fees for Fire Facilities***

Require developers to contribute impact fees to fund the cost of providing fire facilities needed to support new population growth and development.

***Policy P59 Fire and Building Codes***

Continue to enforce the California Fire Code, California Building Code, and Hanford Municipal Code to mitigate threats to safety and property.

***Policy P79 Impact Fees for General Government Facilities***

Require developers to contribute impact fees to fund the cost of providing expanded general government facilities needed to support new population growth and development.

***Chapter 7 Health, Safety, and Noise***

**Goal H1:** Reduced impacts to human life, property, the local economy, and the environment resulting from natural hazards, human-trade hazards, and noise.

**Goal H5:** Protection from the harmful effects of hazardous materials.

**Goal H7:** Protection from the harmful and annoying effects of excessive noise.

**Goal H8:** Protection of the City's economical base by preventing incompatible land uses from encroaching upon existing or planned noise-producing uses.

***Policy H15 Building Codes and Standards for Earthquakes***

Maintain and enforce current building codes and standards to reduce the potential for structural failure caused by ground shaking and other geologic hazards.

***Policy H17 Geologic and Soils Studies***

Require geologic and soils studies to identify potential hazards as part of the approval process for all new development prior to grading activities where questionable conditions exist.

***Policy H20 New Development Requirements for Flood Protection***

Require new development to provide onsite drainage or contribute towards their fair share cost of off-site drainage facilities to handle surface runoff.

***Policy H27 Fire Code***

Ensure that all new buildings are constructed to current Fire Code Standards.

***Policy H34 Sensitive Receptors***

Avoid siting uses with new sensitive receptors near existing industrial facilities that use or produce hazardous materials or may emit toxic air contaminants.

***Policy H39 Aircraft Noise***

Evaluate proposed development proposals against the land use policies of the Kings County Airport Land Use Compatibility Plan.

***Policy H41 Interior Noise Exposure***

Adopt State Noise Insulation Standards (California Code of Regulations, Title 24) and Chapter 35 of the Uniform Building Code concerning interior noise exposure for new single, multi-family housing. Hotels, and motels.

***Policy H42 Noise Evaluation for New Development***

Evaluate proposed development proposals against existing and future noise levels from ground transportation noise sources.

***Policy H50 Sound Walls***

Utilize sound walls at the perimeter of new residential developments to protect from noise generated by transportation corridors.

***Policy H53 Land Use Zones that Encourage Health Food Sales***

Designate land use zones that allow for convenience stores, supermarkets, and neighborhood markets that stock nutritional food choices in every existing and planned neighborhood.

***Policy H60 Health and Land Use Decisions***

Consider environmental justice issues as they are related to potential health impacts associated with land use decisions, including enforcement actions, to reduce the adverse health effects of hazardous materials, industrial activities, and other undesirable land uses on residents regardless of age, culture, ethnicity, gender, race, socioeconomic status, or geographic location.

***Policy H61 Public Amenities***

Consider environmental justice issues as they are related to the equitable provisions of desirable public amenities such as parks, recreational facilities, and other beneficial uses that improve the quality of life.

***Policy H65 Comfortable Walking and Biking Environments***

Provide comfortable environments and destinations for walking and bicycling to integrate physical activity into daily routines.

***Policy H66 Non-Vehicular Access***

Improve, bicycle, pedestrian, and public transportation access to residential areas, education and childcare facilities, employment centers, commercial centers, recreational areas, and other destination points.

***Policy H68 New Growth Areas***

Encourage land use pattern, density, and mix of uses in new growth areas that minimize the number of vehicle miles traveled and support viable choices for public transit, bicycling, and walking.

***Policy H69 Separation between Incompatible Land Uses and Residential Neighborhoods***

Maintain a separation between uses that are incompatible with residential neighborhoods.

***4.1.4 - IMPACTS AND MITIGATION MEASURES******Methodology***

The potential impacts associated with the Project are evaluated on a qualitative basis through a comparison of the existing land use and the proposed land uses, considering the applicable planning goals and policies identified above. Compliance with the aforementioned goals and policies is illustrated in consistency tables provided in the Project Impacts section below. The change in the land use on the project site is significant if the effect described under the thresholds of significance below occurs as a result of the project. The evaluation of the project impacts is based on professional judgment, analysis of the County's land use policies and the significance criteria suggested in California Environmental Quality Act

(CEQA) Guidelines Appendix G, which the County has determined appropriate for this Draft EIR.

### ***Thresholds of Significance***

As identified in CEQA Guidelines Appendix G, to determine whether a project could potentially have a significant adverse effect on land use. A project could have a significant adverse effect on land use if the project would:

- a. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?*

### ***Project Impacts***

#### **Impact 4.1-2 - Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?**

The City of Hanford General Plan establishes land use policies and regulations that are applicable to the Project. In addition to the City of Hanford General Plan, applicable policies and regulations of the Kings County General Plan and Kings County LAFCo were identified as they pertain to annexations of land. The following discussion evaluates the Project's consistency with these plans, policies, and regulations in the lands for which the City and responsible agencies has jurisdiction. Implementation of the proposed Project would require approval of an annexation request from Kings County LAFCo, and approval of a rezoning of the land to a compatible City of Hanford zone district, and tentative tract map with the City of Hanford Planning Commission and City Council.

The Project site has a General Plan designation of Low Density Residential and would be rezoned R-L-5. Per the City General Plan zoning matrix, the R-L-5 zone district is compatible with the General Plan designation. Approval of the tentative map subject to the provisions of the City of Hanford municipal code would allow subdivision of the Project area into lot sizes consistent with the R-L-5 zone district. Pursuant to Table 17.08.020, the proposed development of single-family dwellings throughout the subdivided Project area are permitted uses under the R-L-5 zone district.

Table 4.1-2 presents an evaluation of the Project's consistency with the City of Hanford General Plan and Kings County General Plan. The table lists the goals and policies identified above in the regulatory setting and provides analysis on the Project's general consistency with overarching policies. Additionally, the table provides goals and policies of issue areas that are presented in more detail in other sections of the EIR. As evaluated in detail in Table 4.1-2 below, the Project is consistent with the goals and policies of the City of Hanford General Plan and Kings County General Plan.

As described in Section 4.1-3, Regulatory Setting, Regional, the Project requires approval of an annexation request from Kings County LAFCo. The Kings County LAFCo Policy and Procedures Manual establishes standards for review of annexations that provide favorable and unfavorable factors to be considered with an application for annexation. Consistent with both Kings County and City of Hanford General Plan policy, application for annexation of land within the SOI of the City would occur with Kings County LAFCo and a decision would be made by the Kings County LAFCo Commissioners.

#### **MITIGATION MEASURES**

None

#### **LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant*.

#### **Cumulative Setting Impacts and Mitigation Measures**

##### **CUMULATIVE SETTING**

The study area for the analysis of cumulative impacts is the City of Hanford and the unincorporated portions of Kings County located adjacent to the city limits. The applicable cumulative projections include growth projections from the City of Hanford General Plan and the Kings County General Plan.

The City of Hanford General Plan was last adopted in the year 2017. Anticipated development within the General Plan includes 15,695 residential units needed between 2013 and 2035. The County of Kings General Plan was last adopted in the year 2010. The County General Plan was prepared to accommodate population growth through the year 2035. The General Plan estimates an additional 1,464 residential units to be constructed in the “Non-District County” area.

The Kings County 2016-2024 Housing Element, which includes Hanford, quantifies the number housing needs based on demographic trends noting an approximate 4,832 housing units under the new construction category. The total number of housing units is further defined with income categories stating 549 new construction units for extremely low income, 548 new units for very low income, 821 new units for low income, 865 units for moderate income, and 2,049 units for above-moderate income.

##### **CUMULATIVE IMPACTS**

As discussed in the Cumulative Project List section of the draft EIR, 12 similar projects are proposed within a one and a half-mile radius of the proposed Project, the geographic scope being the City of Hanford General Plan planning area. The Project and future development is required to be consistent with the City of Hanford General Plan and other applicable planning documents. Cumulative projects requiring additional consideration including rezones,

General Plan Amendments, and annexation would require approval by the County. Consistency with the City's applicable General Plan policies and Zoning Ordinance (and any other applicable planning documents) would ensure compliance and orderly development of the proposed Project and other related cumulative projects. Additionally, all cumulative projects are subject to environmental review and compliance with all federal, State, and local policies and plans. As such, cumulative impacts related to land use would be less than significant.

Moreover, the proposed Project's incremental contribution to the less than significant cumulative impacts would not be cumulatively considerable. The anticipated impacts of the proposed Project in conjunction with cumulative development in the area of the Project site would increase the urbanization and result in the loss of agricultural space within the San Joaquin Valley region. However, potential land use impacts require evaluation on a case-by-case basis because of the interactive effects of a specific development and its immediate environment. Further, as described in Table 4.1-2 below, the proposed project would be consistent with the goals and policies of the Hanford General Plan and would not lead to the premature conversion of agricultural land.

#### **MITIGATION MEASURES**

No mitigation measures are required.

#### **CUMULATIVE LEVEL OF SIGNIFICANCE**

Cumulative impacts would be *less than significant*.

**Table 4.1-2**  
**Project Consistency with the Kings County General Plan and City of Hanford General Plan**

| Goals and Policies                                                                                                                                                                                                                                                                                                                 | Consistency Determination | Project Consistency                                                                                                                                                                                                                                                                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Kings County General Plan</b>                                                                                                                                                                                                                                                                                                   |                           |                                                                                                                                                                                                                                                                                                                                                |
| <b>LU Goal E1:</b> Urban Fringe areas continue to allow existing uses, while land remains intended for probable future urban growth and expansion of Cities where urban-level municipal services are provided.                                                                                                                     | Consistent                | The Project site is located within the SOI of the City of Hanford and is designated for low density residential under the City General Plan. The City of Hanford Water System Master Plan and Sewer System Master Plan indicate that municipal services are available or anticipated for development and would be able to service the Project. |
| <b>LU Objective E1.1:</b> Require new development in city fringe areas (except a single-family house or secondary dwelling unit on an existing lot) to annex to the city, and encourage existing developed fringe areas to annex to the City where the City the closest and most logical municipal service provide.                | Consistent                | The Project site is located adjacent to the current city limits and proposes annexation into the City. Per the City's Water System and Sewer System Master Plans, municipal services are either available or proposed for development and would be able to service the Project.                                                                |
| <b>LU Policy E1.1.1:</b> Require urban growth to be contiguous to existing urban development and annex to a city in order to ensure coordinated urban growth according to that City's General Plan policies. Commercial and industrial development may be considered for development in the County when annexation is not feasible | Consistent                | The Project site is located adjacent to current city limits and is within the SOI of Hanford. The site is proposed to be rezoned for low density residential and is consistent with its General Plan designation. The Project proposes to annex into the City of Hanford and follows the urban growth principles of the City's General Plan.   |

| Goals and Policies                                                                                                  | Consistency Determination | Project Consistency                                                                                                                                                                                                                                                                                                                                |
|---------------------------------------------------------------------------------------------------------------------|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| or practical but must develop public improvements to City standards.                                                |                           |                                                                                                                                                                                                                                                                                                                                                    |
| <b>City of Hanford General Plan</b>                                                                                 |                           |                                                                                                                                                                                                                                                                                                                                                    |
| <b>Chapter 3: Land Use and Community Design</b>                                                                     |                           |                                                                                                                                                                                                                                                                                                                                                    |
| <b>Goal L1:</b> A well-planned community that grows in an organized fashion.                                        | Consistent                | The Project follows the General Plan designation of the site for low density residential and proposes a rezoning of R-L-5 (Low Density Residential, 5,000 square feet). Development of the subdivided lots would be subject to review, approval, and inspection by the City. This includes compliance with Zoning Ordinance development standards. |
| <b>Goal L3:</b> Limitation of urban sprawl-style development patterns in new growth areas.                          | Consistent                | The Project follows the General Plan buildout forecast by providing single-family residential lots for an area designated for low density residential uses. The Project is located within the SOI of the City and is adjacent to existing single-family residences. The Project continues orderly City expansion as planned in the General Plan.   |
| <b>Goal L4:</b> Adequate land available to meet housing needs for all citizens through the year 2035.               | Consistent                | The Project site encompasses approximately 88.9 acres. A 13.87-acre portion is anticipated to be removed via a lot-line adjustment,                                                                                                                                                                                                                |
| <b>Goal L5:</b> Stable, high-quality neighborhoods with housing integrated with schools, parks, and availability of | Consistent                | Pursuant to the City of Hanford General Plan and Zoning Map, there is a variety of commercial areas, recreational spaces, and school sites within a one-mile radius of the Project site. A mix of commercially zoned and                                                                                                                           |



| Goals and Policies                                                                                                                                                                          | Consistency Determination | Project Consistency                                                                                                                                                                                                                                                                                                                                                                                     |
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| everyday commercial goods and services.                                                                                                                                                     |                           | existing commercial areas are located east, west, and north of the site. The proposed residential subdivision would meet the adopted standards of the City Municipal Code and Zoning Ordinance.                                                                                                                                                                                                         |
| <b>Goal L6:</b> A wide range of housing choices that insure opportunities for a variety of age groups, lifestyles, and income levels.                                                       | Consistent                | The Project site is proposed to be prezoned R-L-5 and consistent with the General Plan designation of Low Density Residential. The Project proposes a 326-lot residential subdivision with lots ranging between 5,000 to 7,000 square feet meeting the minimum lot size requirements of the City Zoning Ordinance. The lot size range allows for a variety of single-family residences to be developed. |
| <b>Goal L7:</b> Residential densities that encourage both compact and infill development.                                                                                                   | Consistent                | The Project site will be prezoned R-L-5, consistent with the General Plan designation of Low Density Residential. The lots proposed range between 5,000 to 7,000 square feet and meet the minimum lot size and density requirement of the R-L-5 zone district.                                                                                                                                          |
| <b>Goal L30:</b> Preservation and enhancement of Hanford's unique character and achievement of an optimal balance of residential, commercial, industrial, public, and open space land uses. | Consistent                | The Project is consistent with the General Plan buildout as the site is designated for Low Density Residential and is proposed to be prezoned R-L-5.                                                                                                                                                                                                                                                    |

| Goals and Policies                                                                                                                                                                                                                                                                                  | Consistency Determination | Project Consistency                                                                                                                                                                                                                                                                                                                                                                                                                             |
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| <b>Goal L32:</b> Improvement in Hanford's quality of life through use of practical design principles and standards.                                                                                                                                                                                 | Consistent                | Prior to Project construction, the proposed single-family residences, utility/infrastructure installation, and right-of-way development would be subject to review under the adopted development standards of the City including Municipal Code, Zoning Ordinance, and City utility design standards. Review and approval of ministerial building and grading permits ensure consistency for building and design standards throughout the City. |
| <b>Goal L38:</b> Revitalized Arterial corridors that accommodate a mix of nonresidential and residential uses that generate activity and economic vitality and improve the visual character.                                                                                                        | Consistent                | The Project site is located directly south of Hanford Armona Road, a designated Arterial road. The Project is consistent with General Plan buildout assumptions for Low Density Residential and adds 326 residential lots, a ponding basin, and a neighborhood park.                                                                                                                                                                            |
| <b>Policy L1 Planned Area Boundary:</b><br>Designate a Planned Area Boundary to serve as the limits of the area to be planned for urban development.                                                                                                                                                | Consistent                | The Project site is located within the Planned Area Boundary and SOI of the City of Hanford. The site is designated for Low Density Residential under the General Plan.                                                                                                                                                                                                                                                                         |
| <b>Policy L2 2035 Growth Boundary:</b><br>Designate a 2035 Growth Boundary to serve as the limits of the area to be developed with urban uses during the 2015 to 2035 planning period. Locate the 2035 Growth Boundary along major roadways and other natural or manmade physical features that can | Consistent                | See Project Consistency Finding <b>Policy L1</b> .                                                                                                                                                                                                                                                                                                                                                                                              |

| Goals and Policies                                                                                                                                                                                                                                                                             | Consistency Determination | Project Consistency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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| serve as a physical boundary between urban and agricultural uses.                                                                                                                                                                                                                              |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Policy L3 Developable Land Inventory:</b> Include enough land within the 2035 Growth Boundary to meet the project land needs to accommodate growth through the year 2035, along with a 35% market flexibility factor that acknowledges existing constraints to development of some parcels. | Consistent                | The Project proposes residential development consistent with the General Plan designation for Low Density Residential and will accommodate anticipated population growth by providing 326 residential lots.                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Policy L4 New Development within Boundary:</b> Approve new urban development only within the 2035 Growth Boundary.                                                                                                                                                                          | Consistent                | See Project Consistency Finding <b>Policy L1</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Policy L6 Agriculture and the Urban Fringe:</b> Recognize and protect the right of agricultural uses within the growth boundary to exist and continue to operate in proximity to new development on the fringes of the City.                                                                | Consistent                | Currently, the Project site is zoned AL20 under Kings County jurisdiction. The proposed Project will annex the site into the City of Hanford and follow City General Plan buildout for Low Density Residential. Parcels located adjacent to city limits under Kings County jurisdiction will continue to be zoned appropriately for limited agriculture until the annexation of land within the SOI to the City occurs. The development and future residents are subject to City municipal code requirements including the “Right-to-Farm” standards due to its proximity to existing agriculture uses. |

| Goals and Policies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Consistency Determination | Project Consistency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
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| <b>Policy L7 Primary Sphere of Influence:</b><br>Support and pursue an amendment of the City of Hanford's Primary Sphere of Influence to be coterminous to the Planned Area Boundary.                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Consistent                | See Project Consistency Finding <b>Policy L1</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Policy L15 Initiation of Annexations:</b><br>Consider initiation of annexation of land into the City of Hanford only when the following criteria are met: <ol style="list-style-type: none"> <li>1. The land is within the Primary Sphere of Influence.</li> <li>2. The capacity of the water, sewer, fire, school, and police services are adequate to service the area to be annexed or will be adequate at the time that development occurs.</li> <li>3. Land for development within the city limits is insufficient to meet the current land use needs.</li> <li>4. The territory to be annexed is contiguous to existing developed areas.</li> </ol> | Consistent                | The Project proposes annexation of the subject parcels into the City of Hanford. The Project meets the criteria: <ol style="list-style-type: none"> <li>1. The Project site is located within the Primary SOI.</li> <li>2. Per the City of Hanford Water System Master Plan and Sewer System Master Plan, city services are available or anticipated for development to service urban development along Hanford Armona Road.</li> <li>3. The City of Hanford has designated this area for Low Density Residential and is located within the Primary SOI. The Project area has been made available for development and has municipal services in close proximity. Alternative infill sites within the city limits may not be available for development due to a number of variables including availability, municipal services connections, or other constraints.</li> </ol> |

| Goals and Policies                                                                                                                                                                                                      | Consistency Determination | Project Consistency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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|                                                                                                                                                                                                                         |                           | 4. The Project site located adjacent to city limits in all directions. The annexation of the Project site will not create a County island.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Policy L18 Compatibility with Surrounding Neighborhoods:</b> Ensure that new development is compatible with existing and surrounding neighborhoods.                                                                  | Consistent                | <p>Per the City of Hanford General Plan, is similarly designated and compatible with the existing and surrounding neighborhood. Land to the north is designated for Medium Density Residential, and land south, east, and west are designated for Low Density Residential. There is an existing single-family subdivision located directly east of the Project. Therefore, the proposed development would be compatible with the existing Low Density Residential to the east, and compatible with future Medium Density and Low Density Residential anticipated for sites north, south, and west of the Project site.</p> |
| <b>Policy L24 Availability of Infrastructure:</b> Ensure that new residential developments have sufficient urban infrastructure and public facilities to accommodate the number and type of development being proposed. | Consistent                | <p>Per the City of Hanford Water System Master Plan and Sewer System Master Plan, water and sewer infrastructure exists or is anticipated to be developed to service residential development north and south of Hanford-Armona Road. The prepared initial study attached with the NOP determined that the City of Hanford has enough utility capacity to service the residential lots associated with the Project.</p>                                                                                                                                                                                                     |

| Goals and Policies                                                                                                                                                                                                                                                                                                                                                                                          | Consistency Determination | Project Consistency                                                                                                                                                                                                                                                                                                                              |
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| <b>Policy L27 Mix of Densities in Neighborhoods:</b> Encourage mixing of residential densities and lot sizes within neighborhoods.                                                                                                                                                                                                                                                                          | Consistent                | <p>The Project proposes a prezone of R-L-5 which is consistent with the General Plan designation of Low Density Residential. The subdivision proposes lots between 5,000 and 7,000 square feet, which is consistent with the City Zoning Ordinance and provides a mix of lot sizes for this new residential subdivision.</p>                     |
| <b>Policy L29 Agriculture:</b> Recognize the right of agriculture to exist and continue to operate in proximity to the new residential development on the fringes of the city. Deed restrictions may be required which inform future residents of the right of agriculture to continue within the limits of the law without interference or protection from nearby property owners.                         | Consistent                | <p>The City of Hanford has adopted “Right-to-Farm” provisions that accept the inherent potential inconveniences and discomforts associated with agricultural activities and operations. The Project is located adjacent to existing agriculture uses and is subject to the “Right-to-Farm” provisions as adopted in the city Municipal Code.</p> |
| <b>Policy L33 Size of Lots in the Low Density Residential Land Use Designation:</b> While it is recognized that existing lot sizes of 10,000 to 40,000 square feet are included in this designation, new individual lot sizes shall range from 5,000 to 10,000 square feet in size. Under Planned Unit Development provisions, smaller lot sizes at higher densities may be permitted when clustered around | Consistent                | <p>The Project proposes lots sizes between 5,000 square feet and 7,000 square feet. The Project meets the minimum lot size requirements of the Low Density Residential land use designation and proposed prezone of R-L-5.</p>                                                                                                                   |

| Goals and Policies                                                                                                                                                                                                                                                              | Consistency Determination | Project Consistency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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| shared open space amenities or through density bonus policies.                                                                                                                                                                                                                  |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Policy L114 Services and Facilities:</b><br>Include easily accessible services and facilities within each neighborhood to meet the daily needs of neighborhood residents. Most residents should live within a ½ mile walking distance of schools, parks and retail services. | Consistent                | The Project site is located in proximity to a variety of services, including commercial services approximately 0.3 miles east of the Project site and a larger community commercial area approximately 0.5 miles north. The Project proposes the development of a neighborhood park to be utilized by residents of the development and provide recreational opportunities to existing and future residents. Additionally, Centennial Park is located approximately 0.6 miles east of the Project site. The nearest existing school site is approximately one mile east of the Project site. Therefore, there is a variety of accessible services and facilities within reach of the proposed Project site. |
| <b>Policy L120 Encroachment of Incompatible Land Uses:</b> Protect residential neighborhoods from the encroachment of land uses that may have a negative impact on the residential living environment.                                                                          | Consistent                | Per the City of Hanford General Plan, a mixture of residential and commercial uses are proposed in proximity to the Project site. There are no incompatible land uses adjacent to or in proximity of the site that would negatively impact the residential living environment.                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Policy L147 Hanford-Armona Road Residential and Mixed Use Development:</b> Encourage residential and mixed use developed in the                                                                                                                                              | Consistent                | The Project is consistent with the General Plan land designation of Low Density Residential.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

| Goals and Policies                                                                                                                                                                                                                                                                                                                                   | Consistency Determination                                      | Project Consistency                                                                                                                                                                                                                                                                                                                                                                                                                    |
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| Hanford-Armona Road Corridor between 10th and 13th Avenues.                                                                                                                                                                                                                                                                                          |                                                                | The Project proposes 326 residential zoned lots.                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Policy T1 Coordination of Circulation and Land Use:</b> Develop a circulation network that reinforces the desired land use pattern for Hanford, as identified in the land use element.                                                                                                                                                            | <b>Chapter 4: Transportation and Circulation</b><br>Consistent | The Project proposes to access the subdivision from Hanford Armona Road and adjacent local roads. Access from Hanford Armona Road and internal roadways are subject to the design standards adopted by the City of Hanford.                                                                                                                                                                                                            |
| <b>Policy T29 Maximum Level of Service:</b> Maintain a peak hour Level of Service E on streets and intersections within the area bounded by Highway 198, 10th Avenue, 11th Avenue, and Florinda Avenue, inclusive of these streets. Maintain a peak hour Level of Service D on all other streets and intersections with the Planned Growth Boundary. | Consistent                                                     | The prepared Traffic Impact Analysis (TIA) found Level of Service for the 13 <sup>th</sup> Avenue and Hanford Armona Road intersection would operate at LOS E by the year 2043. To mitigate Project impacts on the intersection, signalization of the intersection was found to raise the LOS from LOS F to LOS A. Therefore, with implementation of the mitigation measure MM 4.2-1, the Project would be consistent with Policy T29. |
| <b>Policy T33 Street improvements and Priorities:</b> Prioritize street improvements with emphasis on current and forecasted service levels.                                                                                                                                                                                                         | Consistent                                                     | The Project is expected to pay Traffic Impact Fees and pay its fair share towards improvements to the intersection that is anticipated to perform below LOS standards as identified in the Traffic Impact Analysis.                                                                                                                                                                                                                    |
| <b>Policy T36 Traffic Impact Fees:</b> Periodically review and update the traffic impact fee program to ensure new development contributes its fair share of funding for new street,                                                                                                                                                                 | Consistent                                                     | The Project proponent will pay Traffic Impact Fees as required by the City.                                                                                                                                                                                                                                                                                                                                                            |



| Goals and Policies                                                                                                                                                                                                                                       | Consistency Determination | Project Consistency                                                                                                                                                                                                                                                                                                  |
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| intersection, and highway improvements.                                                                                                                                                                                                                  |                           |                                                                                                                                                                                                                                                                                                                      |
| <b>Policy T40 Pedestrian and Bicycle Placemaking:</b> Promote pedestrian and bicycle improvements that improve connectivity between neighborhoods, provide opportunities for distinctive neighborhood features, and foster a greater sense of community. | Consistent                | The Project proposes to connect to the existing residential neighborhood to the east, Hume Avenue to the south, and Hanford Armona Road to the north. Right-of-way improvements including pedestrian and bicycle-related enhancements would be developed pursuant to standards adopted in the City development code. |
| <b>Policy T48 Traffic Calming:</b> Consider the use of traffic calming designs such as roundabouts, bulb-outs, and other traffic calming designs, where they will improve the operation or LOS of a street.                                              | Consistent                | Right-of-way development and improvements will be constructed to City development code standards.                                                                                                                                                                                                                    |
| <b>Policy T49 Subdivision Connectivity:</b> Design subdivision to maximize connectivity both internally and with other surrounding development.                                                                                                          | Consistent                | The Project has right-of-way connections to the existing subdivision to the east and proposes access to proposed subdivisions to the south and west.                                                                                                                                                                 |
| <b>Policy T51 Alternative Design Standards:</b> Consider alternative roadway design standards for new residential and mixed use development for future streets that may include:                                                                         | Consistent                | Right-of-way development and improvements will be constructed to City development code standards. Listed design alternatives would be considered and implemented as a result of consultation between the Project proponent and City.                                                                                 |

| Goals and Policies                                                                                                                                                                                                                                                                                                                                                                                                                                              | Consistency Determination | Project Consistency                                                                                                                                                                   |
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| <ul style="list-style-type: none"> <li>Narrower street widths on local roadways.</li> <li>Smaller turning radii geometrics on street intersections to improve safety for pedestrians.</li> <li>Tree lined streets in parkways between the curb and sidewalk.</li> <li>Roundabouts in lieu of traffic signals where appropriate conditions exist to maximize intersection efficiency, maintain continuous traffic flow, and reduce accident severity.</li> </ul> |                           |                                                                                                                                                                                       |
| <b>Policy T64 Bicycle Network Master Planning:</b> Maintain a Bicycle Master Plan to coordinate existing and planned infrastructure to support, encourage, and promote bicycle transportation, with effective connections to downtown, major shopping areas, mixed use neighborhoods, community facilities, schools, parks, and employment areas.                                                                                                               | Consistent                | The 2035 Pedestrian and Bicycle Plan slates Hanford Armona Road and Hume Avenue for Class II Bike Lanes. The Project would not conflict with the adopted Pedestrian and Bicycle Plan. |
| <b>Policy T70 Pedestrian Connections:</b> Increase connectivity through direct and safe pedestrian connections to public amenities, neighborhoods,                                                                                                                                                                                                                                                                                                              | Consistent                | The proposed subdivision connects to existing and proposed neighborhoods to the east, west, and south. The Project would be developed to City of Hanford development code standards   |

| Goals and Policies                                                                                                                                                 | Consistency Determination | Project Consistency                                                                                                                                                                                                                                                                                                                                                                                                                                            |
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| village centers, and other destinations throughout the city.                                                                                                       |                           | and provide access to Hanford Armona Road to the north, and Hume Avenue to the south where connection to commercial development exists east and north of the Project site.                                                                                                                                                                                                                                                                                     |
| <b>Chapter 5: Open Space, Conservation and Recreation</b>                                                                                                          |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Goal 08:</b> The equitable distribution of parks throughout the community that are well-designed, accessible, and integrated with the surrounding neighborhood. | Consistent                | In addition to the proposed park located within the Project site, residents are within approximately half a mile of Centennial Park. The proposed park is located towards the northern portion of the Project site with internal roadways providing access to the neighborhood park to all residents of the subdivision. Proposed access points from surrounding proposed and existing neighborhoods will also have access to the proposed park.               |
| <b>Goal 09:</b> Parks provided at a combined ratio of 3.5 acres per 1,000 residents.                                                                               | Consistent                | The Project proposes a 326-lot single-family residential subdivision on an 88.9-acre Project site. Assuming an average person per unit of 3.11 (U.S. Census), the Project would have approximately 1,014 residents. Per the performance standard of 3.5 acres per 1,000 residents, the Project would need approximately 3.55 acres of park space. Therefore, with the anticipated population, the proposed 3.58-acre park would be sufficient to meet Goal 09. |
| <b>Policy 01 Boundary between Urban and Agricultural Uses:</b> Utilize the                                                                                         | Consistent                | The Project site is located within the SOI/Planned Area Boundary. The Project                                                                                                                                                                                                                                                                                                                                                                                  |

| Goals and Policies                                                                                                                                                                                                                             | Consistency Determination | Project Consistency                                                                                                                                                                                                                                                                                                                                                                                                                        |
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| Planned Area Boundary as the long term boundary line between urban uses and agricultural uses and prohibit non-agricultural development outside the Planned Area Boundary.                                                                     |                           | proposes a single-family residential subdivision and does not conflict with the General Plan designation for low density residential.                                                                                                                                                                                                                                                                                                      |
| <b>Policy 02 Agricultural Buffer:</b><br>Coordinate land use policies and designations with Kings County to provide for a buffer between the urban area of Hanford and the surrounding unincorporated communities.                             | Consistent                | Per the Kings County General Plan, land within the SOI of a city is designated for limited agriculture to serve as the buffer between agriculture and the urban boundary of the City. The area outside of the SOI would continue to hold its limited agriculture or general agriculture designation.                                                                                                                                       |
| <b>Policy 04 Interim Agricultural Use:</b><br>Retain existing agricultural areas as an interim use inside the Planned Area Boundary and support agricultural operations until such time that the areas are needed for logical urban expansion. | Consistent                | The Project is following the correct procedures to change its County designation of limited agriculture to the City's low density residential designation by providing a consistent prezone and annexation request. The site is located within the primary SOI and is adjacent to the current city limits.                                                                                                                                 |
| <b>Policy 012 Soil Erosion:</b> Require new development to implement measures to minimize soil erosion related to construction.                                                                                                                | Consistent                | The California Regional Water Quality Control Board requires that construction projects disturbing more than one acre of land will need to prepare and seek approval of a NPDES permit and SWPPP. The NPDES permit and SWPPP address best management practices (BMP) to minimize soil erosion and prevent pollution on surface and groundwater. The Project is also required to be constructed in compliance with City adopted development |

| Goals and Policies                                                                                                                                                                                                                            | Consistency Determination | Project Consistency                                                                                                                                                                                                                     |
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|                                                                                                                                                                                                                                               |                           | standards which include the California Building Code.                                                                                                                                                                                   |
| <b>Policy 015 Energy-efficient Design</b><br><b>Features:</b> Require that new development incorporate energy-efficient design features for HVAC, lighting systems, and insulation to meet or exceed California Code of Regulations Title 24. | Consistent                | As noted, the Project is required to be constructed in compliance with the California Building Code and City development standards. These standards include compliance with the California Code of Regulations, Title 24, Part 11.      |
| <b>Policy 016 Vegetation to Conserve Energy:</b> Encourage the use of native and drought-tolerant shade trees and vines on southern and western exposure building walls as an energy conservation technique.                                  | Consistent                | The Project will comply with the adopted City development code standards and the California Building Code. The California Building Code also provides recommendations for energy-saving standards in the Green Code, Title 24, Part 11. |
| <b>Policy 021 Water Conservation Ordinance:</b> Actively enforce and periodically update the City Water Conservation Ordinance.                                                                                                               | Consistent                | The Project proposes a connection to City services for water. Future residents would be subject to and comply with the provisions of the City Water Conservation Ordinance.                                                             |
| <b>Policy 022 Water Conservation Efforts:</b> Actively encourage water conservation by both agricultural and urban water users.                                                                                                               | Consistent                | See Consistency Finding Policy 021                                                                                                                                                                                                      |
| <b>Policy 024 Drought Tolerant Vegetation:</b> Promote the use of drought-tolerant vegetation to minimize water consumption by                                                                                                                | Consistent                | Development of the Project including landscaping is subject to the City Municipal Code. Landscaping is to be reviewed and                                                                                                               |

| Goals and Policies                                                                                                                                                                                                                                                                                             | Consistency Determination | Project Consistency                                                                                                                                                                                                                                                                                                                                                         |
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| providing information to developers, designers, and homebuyers.                                                                                                                                                                                                                                                |                           | approved by the City which can include the use of drought-tolerant vegetation.                                                                                                                                                                                                                                                                                              |
| <b>Policy 025 Recharge Basins:</b> Protect existing groundwater recharge basins and natural and manmade sloughs and seek the establishment of new basins within and around Hanford.                                                                                                                            | Consistent                | The Project proposes the development of a 2.86-acre basin for stormwater management in addition to groundwater recharge. The basin would be developed in accordance with Municipal Code requirements.                                                                                                                                                                       |
| <b>Policy 028 Water Availability in Emergencies:</b> Ensure that public and private water facilities have adequate capacity to supply emergency needs.                                                                                                                                                         | Consistent                | The Water Supply Assessment prepared for the IS/NOP (Appendix A) determined that the City of Hanford has sufficient water supplies to service the daily and potential emergency needs of the Project.                                                                                                                                                                       |
| <b>Policy 029 Water Conservation Measures for New Development:</b> Encourage new development projects to include water conservation measures, including the use of graywater, reclaimed, or recycled water for landscaping, water-conserving plumbing fixtures and appliances, and water-efficient landscapes. | Consistent                | Project construction is subject to compliance with the adopted development code and California Building Code including the CalGreen Code (Title 24, Part 11). The standards include the use of water-efficient appliances and plumbing fixtures. The Project proposes connection to City services and will comply with water conservation measures implemented by the City. |
| <b>Policy 030 Storm Water Pollution Prevention:</b> Implement the NPDES Stormwater Permit and for those properties exempt from the Permit, require a stormwater pollution prevention plan, including the use of                                                                                                | Consistent                | Per NPDES Permit and SWPPP requirements, the Project will disturb more than one acre of land. Therefore, preparation and approval of the NPDES and SWPPP from the Regional                                                                                                                                                                                                  |

| Goals and Policies                                                                                                                                                                     | Consistency Determination | Project Consistency                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
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| best management practices, to control erosion and sedimentation during construction.                                                                                                   |                           | Water Quality Control Board will be necessary as a regulatory requirement.                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Policy 031 Provision of Open Space Areas:</b> Preserve and enhance natural open space areas.                                                                                        | Consistent                | The Project site proposes the development of a 3.58-acre park space. The site has historically been utilized for agriculture and does not contain a natural open space area.                                                                                                                                                                                                                                                                                                    |
| <b>Policy 035 Impacts from Development:</b> Ensure that potential impacts to biological resources and sensitive habitat are carefully evaluated when considering development projects. | Consistent                | A reconnaissance survey of the Project site and a 50-foot buffer (Biological Survey Area, or BSA) was conducted for the IS/NOP (Appendix A) to determine the presence of a sensitive species of habitat. The IS/NOP determined that the site does not contain a special status species or sensitive habitat. A preconstruction survey would be conducted to ensure no species are present at the time of construction and avoidance measures would be implemented as necessary. |
| <b>Policy 036 Nonnative Invasive Species:</b> Manage or eliminate nonnative invasive species from City-owned property and open space.                                                  | Consistent                | The proposed park design is subject to review and approval by the City. The use of non-native invasive species would not be approved.                                                                                                                                                                                                                                                                                                                                           |
| <b>Policy 037 Mature Trees:</b> Promote the preservation of existing mature trees and encourage the planting of appropriate shade trees                                                | Consistent                | Under Municipal Code standards, landscaping including the planting of street trees would be complied with. The survey of the Project site indicated that mature trees are not present on the site.                                                                                                                                                                                                                                                                              |

| Goals and Policies                                                                                                                                                                                                                                                              | Consistency Determination | Project Consistency                                                                                                                                                                                                                                                                                                                                     |
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| <b>Policy 038 Native Tree Species and Drought-Tolerant Vegetation:</b><br>Encourage the planting of native tree species and drought-tolerant vegetation.                                                                                                                        | Consistent                | Development of the Project including landscaping is subject to the City Municipal Code. Landscaping is to be reviewed and approved by the City which can include the use of native tree species and drought-tolerant vegetation.                                                                                                                        |
| <b>Policy 039 Endangered Wildlife and Habitat:</b> Establish programs in connection with environmental review processes that protect endangered wildlife and their habitats.                                                                                                    | Consistent                | The reconnaissance survey as part of the IS/NOP did not identify a special status species or sensitive habitat where protection of an endangered species or sensitive habitat is necessary. A preconstruction survey would be conducted to determine the presence of a special-status species and avoidance measures would be implemented as necessary. |
| <b>Policy 040 Sensitive Wildlife:</b> Work with state, federal, and local agencies on the preservation of sensitive wildlife species in the City.                                                                                                                               | Consistent                | The reconnaissance survey as part of the IS/NOP did not identify a special status species or sensitive habitat where consultation with a State or federal agency is necessary.                                                                                                                                                                          |
| <b>Policy 044 Flexible Land Use Standards:</b> Adopt flexible land use and design standards to allow the adaptive reuse of historic buildings with a variety of economically viable uses, while minimizing impacts to the historic value and character of sites and structures. | Consistent                | The Project is proposed on land that has historically been utilized for agricultural purposes and is improved with a single-family residence. The single-family residence has not been found to be historically significant. The IS/NOP determined that no impacts to historical structures would occur as a result of the Project.                     |
| <b>Policy 046 Archaeological Site Consultation:</b> Consult with appropriate                                                                                                                                                                                                    | Consistent                | A cultural resource records search and requests for tribal consultations pursuant to                                                                                                                                                                                                                                                                    |



| Goals and Policies                                                                                                                                                                                                                                                     | Consistency Determination | Project Consistency                                                                                                                                                                                                                                  |
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| Native American associations about potential archaeological sites in the beginning stages of the development review process.                                                                                                                                           |                           | Assembly Bill 52 were conducted. The records search indicated negative results and tribal consultation was conducted and completed with no identification of an archaeological site.                                                                 |
| <b>Policy 047 Archaeological Site Study:</b> Require archaeological studies by a certified archaeologist in areas of archaeological potential significance prior to approval of development projects.                                                                  | Consistent                | A review of the Project site within the IS/NOP for archaeological significance provided negative results.                                                                                                                                            |
| <b>Policy 048 Cultural Site Consultation:</b> Consult with the California Archaeological Inventory Southern San Joaquin Valley at California State University, Bakersfield about potential cultural sites on projects that could have an impact on cultural resources. | Consistent                | A Sacred Lands Files search was conducted with the Native American Heritage Commission and a records search with the Southern San Joaquin Valley Information Center. Both searches found that the Project site does not contain a cultural resource. |
| <b>Policy 049 Cultural Site Discovery:</b> Halt construction at a development site if cultural resources are encountered unexpectedly during construction.                                                                                                             | Consistent                | There is no indication that a cultural resource is likely to be found at the Project site, however, the Project proponent will comply with Policy 049 and halt construction if a cultural resource is unexpectedly encountered during construction.  |
| <b>Policy 050 Parks, Recreation, and Open Space Master Plan:</b> Prepare and periodically update a Parks, Recreation, and Open Space Master Plan to plan for                                                                                                           | Consistent                | The Project does not conflict with the goals and policies established in the Parks, Recreation, and Open Space Master Plan. The Project proposes the establishment of a neighborhood park approximately 3.58 acres                                   |

| Goals and Policies                                                                                                                                                                                                                                                                                    | Consistency Determination | Project Consistency                                                                                                                                                                                                                                                  |
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| new growth identified in the land use element.                                                                                                                                                                                                                                                        |                           | in size and meets the 3.5 acre per 1,000 resident performance goal of the General Plan and Parks, Recreation, and Open Space Master Plan.                                                                                                                            |
| <b>Policy 057 Neighborhood Parks:</b><br>Establish neighborhood parks generally between 2 and 5 acres in size at locations easily accessed by residents of the neighborhood.                                                                                                                          | Consistent                | The Project proposes a neighborhood park approximately 3.58 acres in size and provides internal circulation that provides access for the entirety of the subdivision and surrounding neighborhoods.                                                                  |
| <b>Policy 058 Neighborhood Parks Service Area:</b> Neighborhood parks shall have a general service area of approximately ½ mile radius, and situated to avoid patrons having to cross arterial streets, railroad lines, and major waterways.                                                          | Consistent                | The proposed neighborhood park provides access to the entirety of the subdivision through internal right-of-way circulation. Proposed roads also connect with existing and proposed subdivisions to the east, west, and south where access to the park is available. |
| <b>Policy 064 Park Visibility:</b> Parks shall be designed to promote a safe and clean environment for recreation. New neighborhoods shall be designed so that common side and rear residential property lines with parks are minimized and the visibility of parks from public streets is maximized. | Consistent                | The proposed park is located internally within the neighborhood and is not directly adjacent to residential property lines.                                                                                                                                          |
| <b>Policy 065 Development Impact Fee for Parks:</b> Adopt and periodically update a park development impact fee to fund                                                                                                                                                                               | Consistent                | The Project proponent will pay the Parks Impact Fee as part of their permitting process.                                                                                                                                                                             |

| Goals and Policies                                                                                                 | Consistency Determination                                      | Project Consistency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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| new neighborhood and community parks needed to serve new growth.                                                   |                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Goal P1:</b> Adequate water quality and quantity to meet existing and planned needs.                            | <b>Chapter 6: Public Facilities and Services</b><br>Consistent | The prepared Water Supply Assessment (WSA) included with the IS/NOP determined that the City of Hanford has the capacity to service the Project.                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Goal P2:</b> Adequate wastewater collection and treatment to meet both existing and planned needs.              | Consistent                                                     | The City of Hanford Sewer System Master Plan accounts for future development within their service area and planned area boundary. As the Project site is located within the planned area boundary, wastewater needs for the development are accounted for in the General Plan buildout. Costs related to future sewer extensions where the Project would be built are addressed through the use of impact fees that are to be paid by the Project proponent for their fair share of costs associated with extending service. |
| <b>Goal P3:</b> Adequate and effective stormwater collection and disposal to meet both existing and planned needs. | Consistent                                                     | The City of Hanford Storm Drainage System Master Plan accounts for future development within their service area and planned area boundary. As the Project site is located within the planned area boundary, stormwater drainage needs for the development are accounted for in the General Plan buildout. The Project proposes the use of a stormwater drainage basin within the neighborhood to address stormwater collection, however,                                                                                     |

| Goals and Policies                                                                          | Consistency Determination | Project Consistency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
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|                                                                                             |                           | should the extension of City services be necessary, costs related to future stormwater drainage extensions where the Project would be built are addressed through the use of impact fees that are to be paid by the Project proponent for their fair share of costs associated with extending service.                                                                                                                                                                                                               |
| <b>Goal P5:</b> Adequate solid waste disposal capacity to meet existing and future demands. | Consistent                | Solid waste disposal is managed by the Kings County Waste Management Authority and licensed waste haulers. Solid waste would be sent to the Kettleman Hills Landfill which has a remaining capacity of 17.4 million cubic yards. The IS/NOP determined that construction and operation-related solid waste would have a less than significant impact on solid waste disposal capacity for existing and future demands.                                                                                               |
| <b>Goal P12:</b> Adequate provision of school facilities to serve projected growth.         | Consistent                | The City of Hanford has six elementary school districts and one high school district within the Planning Area. The Project site would be located within the Sierra Pacific High School area and the Armona Union Elementary School per the General Plan Background Report. The siting of a new school site is determined by the school district; however, the Project proponent is required to pay development impact fees for the school district to account for impacts related to new residential development and |

| Goals and Policies                                                                                                                                                                                                                                   | Consistency Determination | Project Consistency                                                                                                                                                                                                                                                                                                                                                                                                          |
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|                                                                                                                                                                                                                                                      |                           | the subsequent new population that would utilize school facilities.                                                                                                                                                                                                                                                                                                                                                          |
| <b>Policy P1 Adequate Water Services:</b><br>Provide adequate water services to support the level of development identified in the land use element.                                                                                                 | Consistent                | The prepared Water Supply Assessment (WSA) included with the IS/NOP determined that the City of Hanford has the capacity to service the Project. The Project site is located within the planning area boundary and is accounted for in the General Plan buildout. Development impact fees for the fair share costs of service extensions will be assessed and paid for by the Project proponent at the time of construction. |
| <b>Policy P3 Water Supply and Fire Flow Availability:</b> Condition approval of new development projects and water service extensions on the availability of adequate water supply and the ability to meet domestic and fire flow needs of the area. | Consistent                | The prepared Water Supply Assessment (WSA) included with the IS/NOP determined that the City of Hanford has the capacity to service the Project.                                                                                                                                                                                                                                                                             |
| <b>Policy P7 New Water Infrastructure:</b><br>Require developers to fund and install new water distribution facilities to service their new developments.                                                                                            | Consistent                | The Project proponent will be required to install internal water distribution infrastructure and facilities that will connect with City infrastructure. These improvements will be subject to City development standards.                                                                                                                                                                                                    |
| <b>Policy P8 Impact Fees for Water Facilities:</b> Adopt and periodically update a water impact fee to fund community-wide water supply,                                                                                                             | Consistent                | The Project proponent will be subject to development impact fees associated with water service.                                                                                                                                                                                                                                                                                                                              |

| Goals and Policies                                                                                                                                                                                             | Consistency Determination | Project Consistency                                                                                                                                        |
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| treatment, and distribution infrastructure needed to serve new growth.                                                                                                                                         |                           |                                                                                                                                                            |
| <b>Policy P9 Sufficient Collection and Treatment:</b> Ensure provision of sufficient wastewater collection and treatment facilities to support the existing and new growth identified in the land use element. | Consistent                | See Consistency Finding Goal P2.                                                                                                                           |
| <b>Policy P13 New Wastewater Infrastructure:</b> Require developers to fund and install new wastewater collection facilities to service their new development.                                                 | Consistent                | See Consistency Finding Goal P2.                                                                                                                           |
| <b>Policy P14 Impact Fees for Wastewater Facilities:</b> Adopt and periodically update a wastewater impact fee to fund community-wide wastewater collection and treatment needed to serve new growth.          | Consistent                | See Consistency Finding Goal P2.                                                                                                                           |
| <b>Policy P15 Adequate Storm Water Services:</b> Provide adequate stormwater drainage infrastructure to support the level of development identified in the land use element.                                   | Consistent                | See Consistency Finding Goal P3. The proposed stormwater basin and internal infrastructure of the subdivision will be built to City development standards. |

| Goals and Policies                                                                                                                                                                                                                                                                                                                                                     | Consistency Determination | Project Consistency                                                                                  |
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| <b>Policy P17 Adequate Storm Water Drainage Improvements Availability:</b> Condition approval of development projects on the provision of adequate stormwater drainage improvements.                                                                                                                                                                                   | Consistent                | See Consistency Finding Goal P3 and Policy P15.                                                      |
| <b>Policy P21 New Stormwater Drainage Infrastructure:</b> Require developers to fund and install new stormwater drainage facilities to service their new developments.                                                                                                                                                                                                 | Consistent                | See Consistency Finding Goal P3 and Policy P15.                                                      |
| <b>Policy P22 Impact Fees for Wastewater Facilities:</b> Adopt and periodically update a wastewater drainage impact fee to fund area-wide stormwater drainage needed to serve new growth.                                                                                                                                                                              | Consistent                | The Project proponent will be subject to development impact fees associated with wastewater service. |
| <b>Policy P24 New Development Run-Off Volumes:</b> Require new development to discharge stormwater runoff at volumes no greater than the capacity of any portion of the existing downstream system by utilizing detention or retention or other approved methods, unless the project is providing drainage infrastructure in accordance with an adopted drainage plan. | Consistent                | See Consistency Finding Goal P3 and Policy P15.                                                      |

| Goals and Policies                                                                                                                                                                                              | Consistency Determination | Project Consistency                                                                                                                                                                                                |
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| <b>Policy P37 Impact Fees for Police Facilities:</b> Require new development to provide funding to meet the cost of providing vehicles, equipment, and structures, to meet the needs for new population growth. | Consistent                | The Project proponent will be subject to development impact fees associated with City police services.                                                                                                             |
| <b>Policy P46 Building Design for Safety:</b> Encourage building designs that help to reduce crime and improve resident safety.                                                                                 | Consistent                | The Project will be built pursuant to municipal code standards adopted by the City of Hanford.                                                                                                                     |
| <b>Policy P47 Lighting for Safety:</b> Facilitate public safety through the placement and design of outdoor lighting, while respecting the privacy of surrounding properties.                                   | Consistent                | The Project will be built pursuant to the development code and zoning ordinance standards adopted by the City of Hanford. This includes exterior lighting standards under Section 17.50.140 of the Municipal Code. |
| <b>Policy P52 Impact Fees for Fire Facilities:</b> Require developers to contribute impact fees to fund the cost of providing fire facilities needed to support new population growth and development.          | Consistent                | The Project proponent will be subject to development impact fees associated with City fire services.                                                                                                               |
| <b>Policy P59 Fire and Building Codes:</b> Continue to enforce the California Fire Code, California Building Code, and Hanford Municipal Code to mitigate threats to safety and property.                       | Consistent                | The Project will be constructed in compliance with City adopted development standards including the California Building Code, California Fire Code, and Hanford Municipal Code.                                    |



| Goals and Policies                                                                                                                                                                                                                          | Consistency Determination | Project Consistency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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| <b>Policy P79 Impact Fees for General Government Facilities:</b> Require developers to contribute impact fees to fund the cost of providing expanded general government facilities needed to support new population growth and development. | Consistent                | The Project proponent will be subject to development impact fees associated with City services.                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Chapter 7: Health, Safety, and Noise</b>                                                                                                                                                                                                 |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Goal H1:</b> Reduced impacts to human life, property, the local economy, and the environment resulting from natural hazards, human-trade hazards, and noise.                                                                             | Consistent                | As determined in the IS/NOP, the Project has been determined to be less than significantly impacted by natural hazards, hazardous materials, and noise.                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Goal H5:</b> Protection from the harmful effects of hazardous materials.                                                                                                                                                                 | Consistent                | As reported in the IS/NOP, the Project site does not contain a hazardous waste facility, a cleanup site, or oil extraction well site. The potential use of limited amounts of hazardous materials related to construction would not create a significant impact. Hazardous materials are required to be handled in accordance with federal, State, and local statutes and regulations. The Project does not create a significant hazard to the public or environment as there is minimal use of hazardous materials related to the operation of the Project. |
| <b>Goal H7:</b> Protection from the harmful and annoying effects of excessive noise.                                                                                                                                                        | Consistent                | Project construction and operation are subject to the provisions of the adopted City of Hanford Noise Ordinance. Construction                                                                                                                                                                                                                                                                                                                                                                                                                                |

| Goals and Policies                                                                                                                                                                                                                      | Consistency Determination | Project Consistency                                                                                                                                                                                                                                                                                                                                                                               |
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|                                                                                                                                                                                                                                         |                           | activities would occur between the hours of 7:00 a.m. and 8:00 p.m. consistent with the Noise Ordinance. Residents of the subdivision are subject to and protected by the Noise Ordinance for excessive noise.                                                                                                                                                                                    |
| <b>Goal H8:</b> Protection of the City's economical base by preventing incompatible land uses from encroaching upon existing or planned noise-producing uses.                                                                           | Consistent                | The proposed development of a single-family residential subdivision and rezoning of the site to R-L-5 is consistent with the City General Plan designation of low density residential. Surrounding land uses under the City General Plan include low density residential, medium density residential, and conservation. The Project does not result in an encroachment of incompatible land uses. |
| <b>Policy H15 Building Codes and Standards for Earthquakes:</b> Maintain and enforce current building codes and standards to reduce the potential for structural failure caused by ground shaking and other geologic hazards.           | Consistent                | Project construction is subject to the standards of the adopted Municipal Code which includes compliance with the California Building Code.                                                                                                                                                                                                                                                       |
| <b>Policy H17 Geologic and Soils Studies:</b> Require geologic and soils studies to identify potential hazards as part of the approval process for all new development prior to grading activities where questionable conditions exist. | Consistent                | Prior to development of the Project, geologic and soil studies of the site would be conducted to determine site conditions and applicable development methods. No geologic or soil-related hazard has been identified on the site and has been confirmed in a prepared Phase I Site Assessment (Appendix A).                                                                                      |

| Goals and Policies                                                                                                                                                                                                               | Consistency Determination | Project Consistency                                                                                                                                                                                                                                                                                           |
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| <b>Policy H20 New Development Requirements for Flood Protection:</b><br>Require new development to provide onsite drainage or contribute towards their fair share cost of off-site drainage facilities to handle surface runoff. | Consistent                | The Project site is not located or near a special flood hazard zone. Construction activities will be subject to the conditions of approval for the approved NPDES permit and SWPPP. Drainage improvements including the drainage basin will be developed in accordance to adopted City development standards. |
| <b>Policy H27 Fire Code:</b> Ensure that all new buildings are constructed to current Fire Code Standards.                                                                                                                       | Consistent                | Project construction is subject to the Fire Code development standards and would be reviewed and approved by City Fire Department Staff prior to issuance of permits.                                                                                                                                         |
| <b>Policy H34 Sensitive Receptors:</b> Avoid siting uses with new sensitive receptors near existing industrial facilities that use or produce hazardous materials or may emit toxic air contaminants.                            | Consistent                | The Project site is located approximately 1.4 miles west of the nearest industrial zoned area and is not subject to hazardous materials or toxic air contaminants.                                                                                                                                            |
| <b>Policy H39 Aircraft Noise:</b> Evaluate proposed development proposals against the land use policies of the Kings County Airport Land Use Compatibility Plan.                                                                 | Consistent                | The Project site is located approximately 2.7 miles west of the Hanford Municipal Airport and is outside of the Airport Overlay District and buffer established by the Kings County Airport Land Use Compatibility Plan.                                                                                      |
| <b>Policy H41 Interior Noise Exposure:</b><br>Adopt State Noise Insulation Standards (California Code of Regulations, Title 24) and Chapter 35 of the Uniform Building Code concerning interior noise                            | Consistent                | The Project will comply with the Municipal Code and California Building Code standards for noise insulation and development of single-family housing.                                                                                                                                                         |

| Goals and Policies                                                                                                                                                                                                                                    | Consistency Determination | Project Consistency                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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| exposure for new single, multi-family housing. Hotels, and motels.                                                                                                                                                                                    |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Policy H42 Noise Evaluation for New Development:</b> Evaluate proposed development proposals against existing and future noise levels from ground transportation noise sources.                                                                    | Consistent                | The IS/NOP determined that design of the Project including the use of a six-foot block wall would reduce noise emanating from the proposed residences and protect residences from noise generated from Hanford Armona Road.                                                                                                                                                                                                                                                       |
| <b>Policy H50 Sound Walls:</b> Utilize sound walls at the perimeter of new residential developments to protect from noise generated by transportation corridors.                                                                                      | Consistent                | See Consistency Finding Policy H50.                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Policy H53 Land Use Zones that Encourage Health Food Sales:</b> Designate land use zones that allow for convenience stores, supermarkets, and neighborhood markets that stock nutritional food choices in every existing and planned neighborhood. | Consistent                | The Project site is located along Hanford Armona Road and is in proximity to various commercial designated areas to the north, east, and west. A large Regional Commercial area exists to the north, smaller Neighborhood Commercial and Neighborhood Mixed Use exists east of the site, and planned Highway Commercial, and Corridor Mixed Use are present west of the site. These commercial areas will provide a variety of commercial opportunities for the proposed Project. |
| <b>Policy H60 Health and Land Use Decisions:</b> Consider environmental justice issues as they are related to potential health impacts associated                                                                                                     | Consistent                | The Project site is located towards the southwestern portion of the City where established residential and commercial uses exist. Industrial activities are located towards                                                                                                                                                                                                                                                                                                       |

| Goals and Policies                                                                                                                                                                                                                                                                          | Consistency Determination | Project Consistency                                                                                                                                                                                                                                                                     |
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| with land use decisions, including enforcement actions, to reduce the adverse health effects of hazardous materials, industrial activities, and other undesirable land uses on residents regardless of age, culture, ethnicity, gender, race, socioeconomic status, or geographic location. |                           | the central and extreme southern portions of the city which are located more than a mile from the Project site and would not provide undesirable land uses or significant impacts to future and existing residents.                                                                     |
| <b>Policy H61 Public Amenities:</b> Consider environmental justice issues as they are related to the equitable provisions of desirable public amenities such as parks, recreational facilities, and other beneficial uses that improve the quality of life.                                 | Consistent                | The Project proposes the development of a neighborhood park to be utilized by residents of the proposed subdivision and existing adjacent residents. Additionally, the Project site is in proximity where access to additional recreational facilities is available.                    |
| <b>Policy H65 Comfortable Walking and Biking Environments:</b> Provide comfortable environments and destinations for walking and bicycling to integrate physical activity into daily routines.                                                                                              | Consistent                | The Project would develop pedestrian facilities in accordance with adopted Municipal Code development standards. The Project would not conflict with the 2016 City adopted Pedestrian and Bicycle Master Plan.                                                                          |
| <b>Policy H66 Non-Vehicular Access:</b> Improve, bicycle, pedestrian, and public transportation access to residential areas, education and childcare facilities, employment centers, commercial centers, recreational areas, and other destination points.                                  | Consistent                | The Project would develop internal circulation and pedestrian facilities in accordance with adopted Municipal Code development standards. The Project would not conflict with the 2016 City adopted Pedestrian and Bicycle Master Plan or the Kings Area Regional Transit route access. |

| Goals and Policies                                                                                                                                                                                                                        | Consistency Determination | Project Consistency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Policy H68 New Growth Areas:</b><br>Encourage land use pattern, density, and mix of uses in new growth areas that minimize the number of vehicle miles traveled and support viable choices for public transit, bicycling, and walking. | Consistent                | The Project proposed development of internal circulation and pedestrian facilities in accordance with City Municipal Code requirements. The site is located adjacent to Hanford Armona Road where access to bicycle lanes and public transit is within walking distance to reduce potential vehicle miles traveled. The nearest public transit station is located at the intersection of Hanford Armona Road and 12 <sup>th</sup> Avenue located approximately a half-mile east of the Project site. |
| <b>Policy H69 Separation between Incompatible Land Uses and Residential Neighborhoods:</b> Maintain a separation between uses that are incompatible with residential neighborhoods.                                                       | Consistent                | The Project site is located towards the southwestern portion of the City where established residential and commercial uses exist. Industrial activities are located towards the central and extreme southern portions of the city which are located more than a mile from the Project site. The Project is being proposed, consistent with the City General Plan and Zoning Map.                                                                                                                     |

## 4.2 - Transportation

### 4.2.1 - INTRODUCTION

This section describes the potential impacts to the transportation system associated with the proposed Silicon Valley Ranch Project (Project). The impact analysis examines the roadway, transit, bicycle, pedestrian, rail, and aviation components of the transportation system in the City of Hanford. To provide a context for the impact analysis, this section begins with the environmental setting, which describes the existing physical and operational conditions of the transportation system. Followed by the relevant regulatory framework, which influences the transportation system and provides the basis for impact significance thresholds that are used in the impact analysis findings and recommended mitigation measures.

### 4.2.2 - ENVIRONMENTAL SETTING

#### Roadway Network

The roadway network in the City is a traditional grid-based network of north/south and east/west streets, except for portions of the downtown area, whose grid-based network of streets is angled, consistent with the northeast/southwest railroad alignment. Almost all of the major streets in the City are regularly spaced at half-mile intervals. The grid system provides high levels of accessibility (i.e., travel choices) for residents. The road network is divided into five categories: State Highways, Arterial Streets, Collector Streets, Local Streets, and Alleys (see Tables 4.2-1 and 4.2-2). Hanford has five north/south arterials, 14 east/west arterials, 12 north/south collectors, seven east/west collectors, and numerous local and alleyway streets. Freeways are under the jurisdiction of the State and are outside of City control, but have been assessed for the purposes of this EIR section due to their location within the Project area.

**Table 4.2-1**  
**Existing Arterial Streets**

| North/South Arterial Streets |                                   |
|------------------------------|-----------------------------------|
| Street Name                  | Limits                            |
| 13th Avenue                  | Houston Avenue to Fargo Avenue    |
| 12th Avenue                  | Idaho Avenue to Flint Avenue      |
| 11th Avenue Jackson          | Avenue to Flint Avenue            |
| 10th Avenue Jackson          | Avenue to Hwy 43                  |
| 9th Avenue                   | Houston Avenue to Lacey Boulevard |
| East/West Arterial Streets   |                                   |
| Street Name                  | Limits                            |
| Jackson Avenue               | 11th Avenue to 10th Avenue        |
| Idaho Avenue                 | 12th Avenue to 10th Avenue        |
| Iona Avenue                  | 12th Avenue to 10th Avenue        |

| Street Name           | Limits                                          |
|-----------------------|-------------------------------------------------|
| Houston Avenue        | 13th Avenue to SR 43                            |
| Hanford-Armona Road   | 13th Avenue to 10th Avenue, 9th Avenue to SR 43 |
| 3rd Street (one way)  | 11th Avenue to 10th Avenue                      |
| 4th Street (one way)  | 11th Avenue to 10th Avenue                      |
| 6th Street            | 11th Avenue to 10th Avenue                      |
| 7th Street            | Mall Drive to 10th Avenue                       |
| E. Lacey Boulevard    | 10th Avenue to SR 43                            |
| W. Lacey Boulevard    | 13th Avenue to Irwin Street                     |
| Grangeville Boulevard | 13th Avenue to SR 43                            |
| Fargo Avenue          | 13th Avenue to SR 43                            |
| Flint Avenue          | 12th Avenue to SR 43                            |

**Table 4.2-2**  
**Existing Collector Streets**

| North/South Collector Streets |                                                            |
|-------------------------------|------------------------------------------------------------|
| Street Name                   | Limits                                                     |
| Campus University             | 6th Street to Grangeville Boulevard                        |
| Greenfield Street             | Lacey Boulevard to Centennial Drive                        |
| Rodgers Street                | 11th Avenue to Mallard Way (potentially to Cortner Street) |
| Redington Street              | 4th Street to Grangeville Boulevard                        |
| Irwin Street                  | 4th Street to Grangeville Boulevard                        |
| Harris Street                 | 6th Street to Grangeville Boulevard                        |
| Fitzgerald Lane               | Grangeville Boulevard to Fargo Avenue                      |
| Douty Street                  | Hanford-Armona Road to Flint Avenue                        |
| Kensington Street             | Grangeville Boulevard to Fargo Avenue                      |
| 9 ¼ Avenue                    | Lacey Boulevard to Leland Way                              |
| Centennial Drive              | Lacey Boulevard to Heather Lane                            |
| Glacier Way                   | Fargo Avenue to Flint Avenue                               |
| East/West Collector Streets   |                                                            |
| Street Name                   | Limits                                                     |
| Hume Street                   | 12th Avenue to 11th Avenue                                 |
| 3rd Street                    | 10th Avenue to 9th Avenue                                  |
| Garner Street                 | Lacey Boulevard to 11th Avenue                             |
| Ivy Street                    | 10th Avenue to 11th Avenue                                 |
| Florinda Street               | 11th Avenue to 9 ¼ Avenue                                  |
| Malone Street                 | Douty Street to 10th Avenue                                |
| McCreary Street               | 11th Avenue to Douty Street                                |

### **State Facilities**

The State facilities in the City of Hanford are listed below and are operated and maintained by Caltrans.



- State Route (SR) 198 is an east-west State highway that begins at U.S. Route 101 (US 101) south of King City and ends in Sequoia National Park. It connects the California Central Coast to the San Joaquin Valley, running through Hanford and Visalia. SR 198 intersects the major north-south routes in the Central Valley, including Interstate 5 (I-5) and SR 41, 43, 33, and 99. The portion of SR 198 through Hanford was upgraded to a four-lane freeway in the 1960s. In 2012, the portion from Hanford to SR 99 was upgraded to a four-lane expressway. Interchanges within the Planning Area are located at Highway 43, 10th Avenue, 11th Avenue, 12th Avenue, and 13th Avenue.
- SR 43 is a north-south State highway running roughly parallel to SR 99, connecting Shafter, Wasco, Corcoran, Hanford, and Selma. Arterial access is limited within the Planning Area to intersections at Flint Avenue, Fargo Avenue, 10th Avenue, Grangeville Boulevard, Lacey Boulevard, Hanford-Armona Road, and Houston Avenue.

### **Public Transportation**

The largest provider of public transit services within Kings County is the Kings County Area Public Transit Agency (KCAPTA). KCAPTA is an intra-governmental agency with representatives from Avenal, Kings County, Hanford, and Lemoore and is responsible for the operation of the Kings Area Rural Transit (KART). KART offers a scheduled daily bus service from Hanford to Armona, Lemoore, the Lemoore Naval Air Station, Visalia, Corcoran, Stratford, Kettleman City, and Avenal.

There are currently eight fixed routes that circulate throughout the City and operate as early as 6:30 a.m. until as late as 9:00 p.m. The Fresno route, with service every Monday, Wednesday, and Friday, includes stops at Children's Hospital, Veterans Hospital, Community Regional Medical Center, St. Agnes Medical Center, and Kaiser Permanente Medical Center, as well as access to the downtown area with a stop at Fulton Mall. KART also offers limited service on Saturdays. In addition, KART provides regular transportation service to Visalia Monday through Friday.

KART began a scheduled fixed-route bus service for Hanford in July of 1991. The scheduled bus service operates Monday through Friday from 7:30 a.m. to 11:00 p.m. Expansion of the service is planned as new retail developments are built. West Hills College in Lemoore is served by the system, as are educational institutions in Visalia, including the College of Sequoias, Galen College, San Joaquin Business College, and Chapman College.

Dial-A-Ride is an origin-to-destination service available to eligible residents of Hanford, Lemoore, Armona, and Avenal. The KART dial-a-ride operates from 7:00 a.m. to 11:00 p.m. Monday through Friday and, on Saturday, from 9:00 a.m. to 4:00 p.m.

Park-and-Ride lots provide a meeting place where drivers can safely park and join carpools or vanpools or utilize existing public transit. Park-and-Ride lots are generally located near community entrances, major highways, or local arterials where conveniently scheduled transit service is provided. Lots are designed exclusively for commuters, or they can consist

of an area of parking spaces in complementary land uses such as shopping centers and churches. Hanford has one Park-and-Ride facility located at the northeastern entrance of the City at 10th Avenue and SR 43. There are a number of informal Park and Ride lots located in various communities throughout Kings County and served by KCAPTA vanpools. One of the largest is the old Wal-Mart parking lot located on the northwest corner of 12th Avenue and Lacey Avenue in Hanford.

The San Joaquin Valley Air Pollution Control District (SJVAPCD) provides funding for public transportation kiosks and the construction of Park-and-Ride lots. The purpose of this program is to encourage commuter rideshare activities as an alternative to single-occupant vehicle (SOV) commutes. Funds are available for eligible projects that meet specific program criteria on a first-come, first-served basis until the program funds are exhausted.

KART defines vanpooling as 7 to 15 persons who commute together in a van-type vehicle and who share the operating expenses. The KART vanpool program provides passengers with reliable transportation to and from work. The vanpool program is not only to provide safe travel to work but to provide alternative transportation options, which would ultimately reduce the number of vehicles on the road. Vanpooling is somewhat different from carpooling, though it is based upon the same principle: reducing single-occupant commuting. KART established a vanpool program for riders to the Corcoran and Avenal State prisons in 2001 and has purchased additional vans to implement new vanpools. The program has become very successful with 180 vans in service in 2009 and extends to the areas of Tulare, Kings, Kern, Madera, Ventura, Monterey, and Fresno counties. CalVans has grown to include more than 200 vanpools tailored to meet the needs of commuters, plus nearly 150 vans specially designed for farm workers. The SJVAPCD offers Vanpool Voucher Incentive Programs. The program is meant to encourage commuter rideshare practices among frequent long-distance riders in the San Joaquin Valley.

### ***Bicycle and Pedestrian Circulation***

Nearly all arterials in the city limits have been designated as bikeways except 13th Avenue, Houston Avenue, and Lacey Boulevard. Some collector streets have been identified as bikeways, including Pepper Drive, Glacier Way, Irwin Street, and Rodgers Street. Encore Drive, Nell Way, Leland Way, Fitzgerald Lane, Centennial Drive, Florinda Street, McCreary Avenue, Mall Drive, Liberty Street, Sangiovese Street, University Avenue, Greenfield Avenue, and Hume Drive.

The San Joaquin Valley Railroad has also been designated as a location for an east-west bike path. The railway corridor is not abandoned, and currently, there are no plans to abandon it. Any possible bike path will need to be located within an easement adjacent to the railroad line but not in the railway easement.

### ***Rail/Highway Freight***

Almost 87 percent of the total freight tonnage is moved out of the Valley by truck, while rail accounts for 11 percent. BNSF and SJVR railroads provide freight service to the Hanford

area. The BNSF mainline is double tracked through the entire Planning Area. Over time, it is expected that the number of trains using the system will increase as demand for rail service increases. The BNSF Railroad currently operates between 25 and 30 trains per day on the system. SJVR has a limited schedule of one train per day. The development of new industry along the SJVR right-of-way has prompted renewed investment in the east/west service. SJVR anticipates an increase to three round trips per week and in the speed of trains using this route. Planning for improvements must include identifying future surface crossings that are needed to implement the City's circulation system. In the process of improving the SJVR trackage, existing street crossings need to be modernized to ensure safety and adequate operational standards for both rail and vehicular traffic.

### ***Amtrak Passenger Service***

Amtrak provides passenger rail service from Hanford to the San Francisco Bay Area and Sacramento and service to Southern California by a combination of rail and bus. Freight service is available from both the BNSF Railway and the San Joaquin Valley Railroad. The Amtrak San Joaquin passenger train provides regularly scheduled intercity passenger rail service to Kings County. Stops are made daily at the Hanford and Corcoran stations for each northbound and southbound train. Stops along the San Joaquin line also include Bakersfield, Wasco, Fresno, Madera, Merced, Turlock, Modesto, Stockton, Antioch, Martinez, Richmond, Emeryville, and Oakland, with connecting bus service to Los Angeles, Sacramento, San Francisco, and many other points in Northern and Southern California. Passengers can transfer to the Amtrak Coast Starlight, which continues north to Portland and Seattle. Trains are accessible to the disabled and provide onboard bicycle racks, checked baggage, and food services.

### ***High-Speed Train***

In addition to the airport, train, and bus travel mentioned above, the California High-Speed Rail (HSR) will also serve as a regional transportation system for Fresno and surrounding communities. The proposed HSR line, if approved and funded, would ultimately extend through the San Joaquin Valley, linking San Francisco with Los Angeles. The initial construction section is planned to start in Madera County just north of Bakersfield, with a station located in Fresno's downtown, aligned with Mariposa Street. In November 2013, the California High-Speed Rail Commission identified the preferred route through the Planning Area. The selected route, which runs along the eastern edge of Hanford, roughly follows a north-south route near the high-voltage power lines between 7th and Avenue 8th Avenue.

### ***Aviation***

Hanford Municipal Airport (HJO) is the only public aviation facility in Kings County. The airport does not offer commercial flights. The airport is located on the southeast edge of Hanford and is owned and operated by the City of Hanford. The airport enforces City, State, and federal aviation regulations and administers airport leases, tie-downs, hangars, shelters, fueling, and their overall maintenance.

At present, airport property totals approximately 295 acres. Airport acreage consists of a runway and full-length parallel taxiway, transient and based tie-down aprons, and aircraft storage areas. The runway's current length is 5,180 feet, 75 feet wide, and oriented roughly north/south. The runway is designed to accommodate aircraft with wingspans of up to 79 feet and speeds of up to 121 knots. The runway can accommodate larger aircraft on an occasional basis. Currently, the aircraft parking capacity totals 116 spaces and includes 37 hangar units, 30 shade hangar units, and 49 tie-downs.

Hanford Municipal Airport also serves as a base for the National Weather Service (NWS). The primary function of the NWS is to provide current and forecasted weather conditions in the area (e.g., humidity, wind speed, barometer, dewpoint, temperature, and visibility).

#### **4.2.3 - REGULATORY SETTING**

This section summarizes the transportation policies, laws, and regulations that apply to the proposed Project. This information provides context for the impact discussion related to the Project's consistency with applicable regulatory conditions.

##### **Federal**

No federal plans, policies, regulations, or laws pertaining to transportation are applicable.

##### **State**

##### **CALIFORNIA DEPARTMENT OF TRANSPORTATION**

The California Department of Transportation (Caltrans) is responsible for operating and maintaining the State highway system. In the Project vicinity, State Routes 43 and 198, along with all the freeway ramp terminal intersections, fall under Caltrans jurisdiction. Caltrans provides administrative support for transportation programming decisions made by the California Transportation Commission (CTC) for State funding programs. The State Transportation Improvement Program (STIP) is a multi-year capital improvement program that sets priorities and funds transportation projects envisioned in long-range transportation plans.

##### **SENATE BILL 743**

Senate Bill 743, passed in 2013, required the California Governor's Office of Planning and Research (OPR) to develop new CEQA Guidelines that address traffic metrics under CEQA. As stated in the legislation, upon adoption of the new guidelines, "automobile delay, as described solely by the level of service (LOS) or similar measures of vehicular capacity or traffic congestion shall not be considered a significant impact on the environment pursuant to this division, except in locations specifically identified in the guidelines, if any."

In December 2018, OPR and the State Natural Resources Agency submitted the updated CEQA Guidelines to the Office of Administrative Law for final approval to implement SB 743.

The Office of Administrative Law subsequently approved the updated CEQA Guidelines, thus, implementing SB 743 and making vehicle miles traveled (VMT) the primary metric used to analyze transportation impacts.

### **COMPLETE STREETS**

The California Complete Streets Act (Act) requires general plans updated after January 30, 2011, to develop a plan for a multi-modal transportation system. The goal of the Act is to encourage cities to rethink policies that emphasize automobile circulation and prioritize motor vehicle improvements and come up with creative solutions that emphasize all modes of transportation. Complete Streets design has many advantages. When people have more transportation options, there are fewer traffic jams, and the overall capacity of the transportation network increases. Additionally, increased transit ridership, walking, and biking can reduce air pollution, energy consumption, and greenhouse gas emissions while improving the overall travel experience for road users. Providing more transportation options will allow the City to meet its future travel demands without solely relying on motorized vehicles.

While there is no standard design template for a Complete Street, it generally includes one or more of the following features: bicycle lanes, wide shoulders, well-designed and well-placed crosswalks, crossing islands in appropriate midblock locations, bus pullouts or special bus lanes, audible and accessible pedestrian signals, sidewalk bulb-outs, center medians, street trees, planter strips, and ground cover. Complete Streets create a sense of place and improve public safety due to their emphasis on comprehensively encouraging pedestrian activity. The Act is implemented through the City's Active Transportation Plan and General Plan.

### **Regional**

#### **KINGS COUNTY ASSOCIATION OF GOVERNMENTS (KCAG)**

The KCAG is the State-designated Regional Transportation Planning Agency (RTPA) recognized by the State's Business, Transportation, and Housing Agency. KCAG is responsible for:

- Administering the Regional Transportation Plan.
- Preparing a Regional Transportation Improvement Program and the Federal Transportation Improvement Program.
- Reviewing the State Transportation Improvement Program and other State transportation programs.
- Monitoring local public transit operations.
- Overseeing federal transportation grant proposals.
- Administering the Local Transportation Fund and State Transit Assistance funds.

Other objectives of KCAG include facilitating planning on a regional scale with an emphasis on transportation, finding and researching problems in urban growth, and considering

common concerns of its constituent agencies. KCAG aims to tackle the issues that the members have in common but could not otherwise handle individually.

### ***2018 KINGS COUNTY REGIONAL TRANSPORTATION PLAN***

The 2018 Regional Transportation Plan (RTP) is a comprehensive assessment of all forms of transportation available in Kings County and the needs for travel and goods movement through the year 2042. The 2018 RTP update was accomplished within the framework of the KCAG, with assistance from Avenal, Corcoran, Hanford, Lemoore, and Kings County. The Santa Rosa Tachi-Yokut Tribe was also consulted during the development of the RTP. Caltrans District 6 and the San Joaquin Valley Air Pollution Control District staff provided invaluable service by furnishing helpful information, comments, and general support (KCAG, 2022).

### ***2022 REGIONAL TRANSPORTATION IMPROVEMENT PROGRAM (2022 RTIP)***

The Regional Transportation Improvement Program (RTIP) is a list of transportation projects and programs to be funded and implemented over the next three years. KCAG submits this document to Caltrans and amends the program on a quarterly cycle (KCAG, 2022).

## ***Local***

### ***CITY OF HANFORD GENERAL PLAN***

The Hanford General Plan serves as the community's guide for the continued development, enhancement, and revitalization of the City of Hanford. The General Plan includes the following policies related to transportation and circulation that are relevant to this analysis:

#### ***Policy T1 Coordination of Circulation and Land Use***

Develop a circulation network that reinforces the desired land use pattern for Hanford, as identified in the Land Use Element.

#### ***Policy T2 Street Classification System***

Designate a functional street classification system that includes Highways, Major Arterials, Arterials, Collectors, Minor Collectors, and Local streets.

#### ***Policy T3 Circulation Map***

Identify the locations of existing and future Highways, Major Arterials, Arterials, Collectors, and Minor Collectors with the Planned Area Boundary on the Circulation Map. Locations shown shall be fixed, with allowance for slight variation from the depicted alignments of new Collectors and Minor Collectors.

***Policy T4 Regional System Improvements***

Identify and support improvements to regional transportation system improvements both within and outside the Planning Area that will improve mobility to and from Hanford. Policy T5 Funding Sources and Improvements coordinate with Caltrans and KCAG for funding and timely construction of programmed State highway and interchange improvements.

***Policy T6 Highway Improvements***

Coordinate with Caltrans to identify needed improvements to highway facilities in the City.

***Policy T7 Highway 198 and 9th Avenue***

Identify any program improvements necessary to maintain LOS standards at the intersection of SR 198 and 9th Avenue.

***Policy T8 Highway 43 Access Limitations***

Limit new direct access to Highway 43, and require building setbacks and offers of dedication to accommodate future widening.

***Policy T9 Highway 43 Intersection Limitations***

Limit roadway intersections with Highway 43 to Flint Avenue, 10th Avenue, Fargo Avenue, future 9th Avenue, Grangeville Boulevard, Lacey Boulevard, Hanford-Armona Road, Houston Avenue, Iona Avenue, Idaho Avenue, and Jackson Avenue.

***Policy T10 Purpose of Major Arterials***

Major Arterials shall provide through traffic movement around the edge of Hanford on continuous routes with very limited access to abutting property and local streets.

***Policy T11 Designation of Major Arterials***

Major Arterials shall be designated on Flint Avenue between 13th Avenue and SR 43, on 13th Avenue between Flint Avenue and Houston Avenue, and Houston Avenue between 13th Avenue and SR 43.

***Policy T12 Access to Major Arterials***

New access to Major Arterials shall be limited to new intersections with Arterials and Collectors, and where the Major Arterial is a property's only legal access to a public right of way.

***Policy T13 Purpose of Arterials***

Arterials shall provide for through traffic movement on continuous routes through Hanford with limited access to abutting property.

***Policy T14 Designation of Arterials***

Arterials shall be designated generally on the one-mile grid of streets within the Planned Area Boundary. The specific streets designated are Flint Avenue, Fargo Avenue, Grangeville Boulevard, Lacey Boulevard, Hanford-Armona Road, Houston Avenue, Iona Avenue, Idaho Avenue, 7th Avenue, 9th Avenue, 10th Avenue, 11th Avenue, 12th Avenue, and 13th Avenue.

***Policy T15 Access to Major Arterials***

New access to Arterials from new local streets and new driveways shall be limited to maximize through traffic movements.

***Policy T16 Consolidation of Arterial Access Points***

Encourage the consolidation or elimination of driveways, access points, and curb cuts along existing Arterials.

***Policy T17 Purpose of Collectors***

Collectors shall provide traffic movement within a limited area and connect local roads to the Arterial street system.

***Policy T18 Designation of Collectors***

Collectors shall be designated generally at half-mile intervals between Arterials in new growth areas and on selected existing through streets that connect to two or more Arterials.

***Policy T19 Access to Collectors***

New access to Collectors from new local streets and abutting property is generally permitted but may be limited in some cases depending on planned roadway capacity and adjacent land use development patterns.

***Policy T20 Purpose of Minor Collectors***

Minor Collectors shall provide internal traffic movement within a neighborhood and connect local roads to Collectors and/or Arterials.

***Policy T21 Designation of Collectors***

Minor Collectors shall be designated in developed areas without a half-mile Collector interval and/or where the street is not wide enough to be designated a Collector.

***Policy T22 Access to Collectors***

Minor Collectors shall have no access limitations.



***Policy T23 Purpose of Local Streets***

Local streets shall provide internal traffic movement within a neighborhood and direct access to abutting property.

***Policy T24 Block Lengths***

Adopt standards for block lengths for new local streets to promote ease of movement and connectivity.

***Policy T25 Cul-de-sacs***

Construct cul-de-sacs on all permanent dead-end streets. New cul-de-sacs shall be discouraged in commercial and industrial developments. Adopt maximum lengths of new local streets with cul-de-sacs.

***Policy T26 Cul-de-sac***

Non-motorized connectivity encourages sidewalks and breaks in perimeter walls to allow pedestrian, bicycle, and visual access from cul-de-sac streets to other nearby streets.

***Policy T27 Maintenance of Local Streets***

Adopt policies that incorporate the use of maintenance districts to fund local street maintenance.

***Policy T28 Alleys***

Generally discourage new alleys, but allow in limited cases when effectively incorporated into the overall neighborhood design. Fund the maintenance of new alleys with maintenance districts.

***Policy T29 Maximum Level of Service***

Maintain a peak hour LOS E on streets and intersections within the area bounded by Highway 198, 10th Avenue, 11th Avenue, and Florinda Avenue, inclusive of these streets. Maintain a peak hour LOS D on all other streets and intersections with the Planned Growth Boundary.

***Policy T30 Capital Improvement Program***

Include the acquisition of right-of-way and the construction and maintenance of streets in the City Capital Improvement Program.

***Policy T31 Coordination with Development Approvals***

Coordinate additions and modifications to the roadway system with land development approvals.

***Policy T32 Ultimate Rights-of-Way***

Acquire control of land within ultimate right-of-way of Arterial and Collector streets during early stages of development.

***Policy T33 Street Improvements and Priorities***

Prioritize street improvements with emphasis on current and forecasted service levels.

***Policy T34 Kings County Regional Transportation Plan***

Local circulation system improvements shall be consistent with the goals and objectives stated in the Kings County Regional Transportation Plan.

***Policy T35 Caltrans Coordination***

Coordinate with Caltrans to identify needed improvements to its highway facilities in the City and implement necessary programs to assist in improving State Route 43 and 198 and its interchanges/intersections with local roadways.

***Policy T36 Traffic Impact Fees***

Periodically review and update the traffic impact fee program to ensure new development contributes its fair share of funding for new streets, intersections, and highway improvements.

***Policy T37 Shade Trees in Planter Strips***

Where adequate space permits, include street trees planted in planter strips between the curb and sidewalk to shade paved street surfaces.

***Policy T38 Operational Improvements First***

Maximize operational improvements before widening existing streets even when they do not meet current width standards.

***Policy T39 Accommodating All Modes of Traffic***

Plan, design, and construct new transportation improvement projects to safely accommodate the needs of pedestrians, bicyclists, transit riders, motorists, and persons of all abilities.

***Policy T40 Pedestrian and Bicycle Placemaking***

Promote pedestrian and bicycle improvements that improve connectivity between neighborhoods, provide opportunities for distinctive neighborhood features, and foster a greater sense of community.

***Policy T41 Streetscape Enhancements***

Strive to improve the visual character of roadway corridors by improving streetscapes with amenities such as street trees, pedestrian-scaled lighting, underground utilities, water-efficient landscaping, and streetscape furniture.

***Policy T42 Existing Sound Walls and Fences***

Encourage landscaping improvements along walls and fences adjacent to major streets to discourage graffiti and enhance visual character.

***Policy T43 Safe Routes to Schools Programs***

Promote Safe Routes to Schools Programs for all schools serving the City.

***Policy T44 Funding***

Seek outside funding for Safe Routes to Schools projects.

***Policy T45 Truck Routes***

Minimize the adverse impact of truck traffic on the community by designating, maintaining, and enforcing a system of designated truck routes.

***Policy T46 Good Movement Strategies***

Coordinate with regional transportation agencies to plan and implement goods movement strategies, including those that improve mobility, deliver goods efficiently, and minimize negative environmental impacts.

***Policy T47 Truck Parking***

Identify locations where heavy truck parking is acceptable and where it is prohibited based upon adjacent land use designations.

***Policy T48 Traffic Calming***

Consider the use of traffic-calming designs such as roundabouts, bulb-outs, and other traffic-calming designs, which will improve the operation or LOS of a street.

***Policy T49 Subdivision Connectivity***

Design subdivisions to maximize connectivity both internally and with other surrounding development.

***Policy T50 Carpool Programs***

Encourage the use of carpooling, vanpooling, and flexible employment hours.

***Policy T51 Alternative Design Standards***

Consider alternative roadway design standards for new residential and mixed use development for future streets that may include:

- Narrower street widths on local roadways.
- Smaller turning radii geometrics on street intersections to improve safety for pedestrians.
- Tree-lined streets in parkways between the curb and sidewalk.
- Roundabouts in lieu of traffic signals where appropriate conditions exist to maximize intersection efficiency, maintain continuous traffic flow, and reduce accident severity.

***Policy T65 Bicycle Network Master Planning***

Maintain a Bicycle Master Plan to coordinate existing and planned infrastructure to support, encourage, and promote bicycle transportation, with effective connections to downtown, major shopping areas, mixed use neighborhoods, community facilities, schools, parks, and employment areas.

***Policy T70 Pedestrian Connections***

Increase connectivity through direct and safe pedestrian connections to public amenities, neighborhoods, village centers, and other destinations throughout the city.

***CITY OF HANFORD VMT THRESHOLDS AND IMPLEMENTATION GUIDELINES***

The City of Hanford adopted a set of vehicle miles traveled (VMT) thresholds to support the shift from a delay-based analysis (LOS) to VMT. The adopted VMT Thresholds and Implementation Guidelines. The City VMT Guidelines provide implementation of CEQA VMT metrics as applicable to the City of Hanford through the establishment of VMT screening criteria and VMT analysis thresholds.

City VMT Guidelines provide a list of screening criteria for projects and activities that may result in a reduction of VMT and GHG emissions. If a project meets one or more of the following screening factors, the project may be presumed to produce a less than significant VMT impact:

- The project is within 0.5 miles (mi) of a transit priority area or a high-quality transit area and is consistent with the Regional Transportation Plan (RTP)/ Sustainable Communities Strategy (SCS), has a floor area ratio (FAR) equal or greater than 0.75, does not provide more parking than what is required by the City's Municipal Code, or does not reduce the number of affordable residential units. In accordance with SB 743, "transit priority areas" are defined as "an area within one-half mile of a major transit stop that is existing or planned, if the planned stop is scheduled to be completed within the planning horizon included in a Transportation Improvement Program. A "major transit stop" means: "a site containing an existing rail transit

station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service of 15 minutes or less during the morning and afternoon peak commute periods.” A high-quality transit area or corridor is a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours. (See Pub. Resources Code, § 21099, subds. (a)(7), (b)(1).)

- The project includes local-serving retail with a combined area of less than 55,000 square feet (sf). Whether a retail project is local-serving or not will be determined at the discretion of the City. As included in Appendix A, a list of recently completed local serving retail projects (as identified by the City) demonstrates that retail projects up to 55,000 sf could be considered as local serving. Additionally, as shown in Table B, retail projects up to 125,000 sf would not have a significant GHG impact. As explained in section 3.1.1, projects not having a significant GHG impact would not also have a significant VMT impact. However, based on substantial evidence for justifying local serving retail, as included in Appendix A, the City establishes retail projects less than 55,000 sf to be screened out.
- Redevelopment projects that result in an equal or net reduction in VMT can be considered to have less than significant VMT impact. A net reduction in VMT would occur if the land use proposed by the project would generate less VMT than the existing land use.
- The project includes 100 percent affordable housing units. Affordable housing units consists of low-income households and research has shown that low-income households produce lower VMT compared to a market-rate housing unit.
- A project consistent with the City’s General Plan can be successfully screened if the project would generate fewer than 1,000 average daily trips (ADT), while a project not consistent with the City’s General Plan can be screened if the project would generate fewer than 500 ADT. Consistency with the General Plan is required because the GHG and therefore VMT reduction targets for MPOs were established by CARB and are included in the RTPs. The RTP utilizes the latest version of City’s General Plan for analyzing GHG emissions.
- Institutional/government and public service uses that support community health, safety and welfare may also be screened from subsequent CEQA VMT analysis. These facilities (e.g., police stations, fire stations, government offices, utilities, public libraries, community centers, and refuse stations) would be a part of the community and, as public services, the VMT would be accounted for within the community. A decision whether a particular project can be categorized as a public service facility will be determined at the discretion of the City. Similarly, any other similar use not included in the list can be approved on a case-by-case basis by the City as applicable. As such, these uses would result in reduction in total VMT due to the proximity of these services within the community. Additionally, many of these facilities would generate fewer than 1,000 ADT and/or use vehicles other than passenger-cars or

light-duty trucks. These other vehicle fleets are subject to regulation outside of CEQA, such as the California Air Resources Board (CARB) and San Joaquin Valley Air Pollution Control District.

- Local parks, daycare centers, student housing projects on or adjacent to a college campus, local-serving gas stations, banks, and K–12 public schools.
- Projects located in areas with low VMT may be screened out from further CEQA analysis. The TA acknowledges that residential and office projects located in areas having a low VMT, (which incorporate features such as density, mix of uses, transit accessibility), tend to exhibit similarly low VMT. Also, areas that are mapped as low VMT areas do not need to prepare any additional VMT analysis. Therefore, residential, office, industrial, or mixed-use projects that are consistent with the City's General Plan and located within low VMT areas (using the City of Hanford VMT Screening Tool2 and applying appropriate thresholds) can be presumed to have similar low VMT profiles and could be screened out from the need for further VMT analysis. It should be noted that if a project constitutes a General Plan Amendment or Zone Change, such projects will be evaluated on a case-by-case basis. Figures 4, 5, and 6 illustrate the VMT per capita, VMT per employee, and VMT per service population screening maps for the City.
- The 2022 State CEQA Guidelines Section 15007 (c) states that “if a document meets the content requirements in effect when the document is sent out for public review, the document shall not need to be revised to conform to any new content requirements in Guideline amendments taking effect before the document is finally approved.” Therefore, if a development/land use plan/transportation project is already cleared by a certified Environmental Impact Report (EIR) or an adopted Negative Declaration/Mitigated Negative Declaration, then subsequent projects that are consistent with the approved project will not require a new VMT analysis unless mandated by another section of the CEQA Guidelines.

If the project meets any one of the screening criteria, it may be presumed to have a less than significant transportation impact. No further VMT analysis would then be necessary. The CEQA document shall enumerate the screening criteria and how the project meets or exceeds that applicable VMT threshold. If project screening does not apply, a VMT analysis will be required. The extent of this analysis may be a simple algebraic demonstration or a more sophisticated traffic modeling exercise. For all projects that require a VMT analysis, use of the KCAG TDM is required unless the project includes a special land use that is difficult to analyze using a travel demand model. For the latter, the City may require a qualitative analysis or an analysis using empirical data as applicable to the project. Next, the project-generated VMT (per capita, per employee, per service population, or total) is compared to the appropriate significance threshold. If the project VMT metric is less than the significance threshold, the project is presumed to create a less-than-significant impact. No further VMT analysis for CEQA purposes would be required.

**Table 4.2-3  
City of Hanford VMT Thresholds**

| <b>VMT Metric</b>          | <b>Threshold</b> | <b>Regional Average</b> |
|----------------------------|------------------|-------------------------|
| VMT per Capita             | 8.99             | 10.33                   |
| VMT per Employee           | 16.95            | 19.48                   |
| VMT per Service Population | 21.84            | 25.10                   |

Source: City of Hanford VMT Thresholds and Implementation Guidelines

Should project VMT metrics exceed the significance threshold stated in Table 4.2-3, mitigation measures will be required.

#### **4.2.4 - IMPACTS AND MITIGATION MEASURES**

##### **Methodology**

As stated above, SB 743 requires all CEQA analyses relating to transportation impacts to be conducted using the vehicle miles traveled (VMT) metric. As the City of Hanford and KCAG have adopted guidelines and thresholds for VMT, the screening and thresholds from their guidelines are utilized to determine if an impact occurs as a result of the Project. A Traffic Impact Analysis (TIA) Report was prepared for this Project (see Appendix B) (Ruettgers and Schuler Civil Engineers, 2024).

##### **Thresholds of Significance**

The following criteria, as established in Appendix G of the CEQA Guidelines, will be utilized to determine if a project could potentially have a significant impact:

- a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?*
- b) Conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b)?*

##### **Project Impacts**

##### **Impact 4.2-1 - Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?**

The first step to determining Project trip generation is to assess the impacts that the Project may have on the surrounding roadway network in the City of Hanford. The trip generation rates for the proposed Project were obtained from the 11th Edition of the Trip Generation Manual published by the Institute of Transportation Engineers (ITE). At build-out, the Project is estimated to generate a maximum of 2,993 daily trips, 219 AM peak hour trips, and 302 PM peak hour trips.

As noted in the regulatory section above, the Hanford General Plan has policies related to traffic systems. The General Plan has established LOS E as the acceptable level on streets and

intersections within the area bounded by State Route 198, 10th Avenue, 11th Avenue, and Florinda Avenue, and a peak hour LOS D on all other streets and intersections within the Planned Growth Boundary. The County of Kings has established LOS D as the acceptable level of traffic congestion on County roads. Since the study facilities for this Project lie outside of the SR 198, 10th Avenue, 11th Avenue, and Florinda Avenue boundary, the LOS D threshold was utilized to evaluate the potential significance of LOS impacts to the City of Hanford roadway facilities and the County of Kings facilities.

### ***Existing Level of Service Analysis***

The following roadways and corresponding intersections were analyzed in the TIA:

- 11<sup>th</sup> Avenue
- 12<sup>th</sup> Avenue
- 13<sup>th</sup> Avenue
- Hanford-Armona Road
- Hume Avenue
- State Route 198

As noted in the TIA for this Project (Appendix B), all study intersections currently operate at an acceptable LOS during both AM and PM peak periods.

### ***Existing Plus Project Traffic Conditions***

Access to and from the Project site will be from four main access points and two internal access points connecting to the existing easterly adjacent subdivision. One access point will be from Hanford-Armona Road. Three access points will be located along the south side of the site providing access to Hume Avenue.

The TIA analyzed the location of the existing and proposed roadways and access points relative to those in the vicinity of the Project site. Based on this review, all proposed roadways and access points are proposed in locations that minimize traffic-operational impacts to existing and future roadway networks.

A capacity analysis of the study intersections was conducted utilizing the Transportation Research Board's *Highway Capacity Manual* (HCM) and produced estimates for the following traffic scenarios:

- Existing Year (2024)
- Existing Year (2024) + Project
- Opening Year (2026)
- Opening Year (2026) + Project
- Future Year (2044)
- Future Year (2044) + Project



LOS criteria for unsignalized and signalized intersections as defined in HCM are presented in Tables 4.2-4 and 4.2-5 below.

**Table 4.2-4**  
**Unsignalized Intersection Level of Service Criteria**

| Level of Service | Average Control Delay<br>(sec/veh) | Expected Delay to Minor<br>Street Traffic |
|------------------|------------------------------------|-------------------------------------------|
| A                | ≤ 10                               | Little or no delay                        |
| B                | > 10 and ≤ 15                      | Short delays                              |
| C                | > 15 and ≤ 25                      | Average delays                            |
| D                | > 25 and ≤ 35                      | Long delays                               |
| E                | > 35 and ≤ 50                      | Very long delays                          |
| F                | > 50                               | Extreme delays                            |

Source: Appendix B

**Table 4.2-5**  
**Signalized Intersection Level of Service Criteria**

| Level of Service | Average Control Delay<br>(sec/veh) | Volume-to-Capacity Ratio |
|------------------|------------------------------------|--------------------------|
| A                | ≤ 10                               | < 0.60                   |
| B                | > 10 and ≤ 20                      | 0.61 - 0.70              |
| C                | > 20 and ≤ 35                      | 0.71 - 0.80              |
| D                | > 35 and ≤ 55                      | 0.81 - 0.90              |
| E                | > 55 and ≤ 80                      | 0.91 - 1.00              |
| F                | > 80                               | > 1.00                   |

Source: Appendix B

Tables 4.2-6 and 4.2-7 summarize the Weekday AM and PM Peak Hour LOS for study area intersections. Based on the analysis prepared, two intersections are projected to operate at below the acceptable LOS in the 2044 and 2044 + Project scenarios.

**Table 4.2-6**  
**Intersection Level of Service Weekday AM Peak Hour**

| ID# | Intersection                        | Control Type | 2024 | 2024+Project | 2026 | 2026+Project | 2044 | 2044+Project | 2044+Project w/Mitigation |
|-----|-------------------------------------|--------------|------|--------------|------|--------------|------|--------------|---------------------------|
| 1   | 12th Ave & SR 198 WB Ramps          | Signal       | B    | B            | B    | B            | B    | B            | -                         |
| 2   | 12th Ave & SR 198 EB Ramps          | Signal       | B    | B            | B    | B            | B    | B            | -                         |
| 3   | SR 198 WB Ramps & Hanford Armona Rd | Roundabout   | A    | A            | A    | A            | B    | C            | -                         |
| 4   | SR 198 EB Ramps                     | NB           | B    | B            | B    | B            | C    | C            | -                         |

| ID# | Intersection                                        | Control Type       | 2024        | 2024+Project | 2026        | 2026+Project | 2044                  | 2044+Project          | 2044+Project w/Mitigation |
|-----|-----------------------------------------------------|--------------------|-------------|--------------|-------------|--------------|-----------------------|-----------------------|---------------------------|
| 5   | & Hanford Armona Rd<br>13th Ave & Hanford Armona Rd | NB<br>SB<br>Signal | B<br>A<br>- | B<br>A<br>-  | B<br>A<br>- | C<br>A<br>-  | D<br>(31.4)<br>A<br>- | F<br>(35.0)<br>A<br>- | -<br>-<br>A               |
| 6   | 12th Ave & Hanford Armona Rd                        | Signal             | C           | C            | C           | C            | C                     | C                     | C                         |
| 7   | 11th Ave & Hanford Armona Rd                        | Signal             | B           | B            | B           | B            | C                     | C                     | -                         |
| 8   | 12th Ave & Hume Ave                                 | WB                 | B           | B            | B           | B            | C                     | C                     | -                         |

Source: Appendix B

**Table 4.2-7**  
**Intersection Level of Service Weekday PM Peak Hour**

| ID# | Intersection                        | Control Type       | 2024        | 2024+Project | 2026        | 2026+Project | 2044                  | 2044+Project          | 2044+Project w/Mitigation |
|-----|-------------------------------------|--------------------|-------------|--------------|-------------|--------------|-----------------------|-----------------------|---------------------------|
| 1   | 12th Ave & SR 198 WB Ramps          | Signal             | B           | B            | C           | B            | C                     | C                     | -                         |
| 2   | 12th Ave & SR 198 EB Ramps          | Signal             | A           | A            | A           | B            | B                     | B                     | -                         |
| 3   | SR 198 WB Ramps & Hanford Armona Rd | Roundabout         | A           | A            | A           | A            | B                     | B                     | -                         |
| 4   | SR 198 EB Ramps & Hanford Armona Rd | NB                 | B           | B            | B           | B            | C                     | C                     | -                         |
| 5   | 13th Ave & Hanford Armona Rd        | NB<br>SB<br>Signal | C<br>A<br>- | C<br>A<br>-  | C<br>A<br>- | C<br>A<br>-  | F<br>(>300)<br>A<br>- | F<br>(>300)<br>A<br>- | -<br>-<br>B               |
| 6   | 12th Ave & Hanford Armona Rd        | Signal             | C           | C            | C           | C            | D<br>(40.9)           | D<br>(42.1)           | C                         |
| 7   | 11th Ave & Hanford Armona Rd        | Signal             | B           | B            | C           | C            | C                     | C                     | -                         |
| 8   | 12th Ave & Hume Ave                 | WB                 | B           | B            | B           | B            | C                     | C                     | -                         |

Source: Appendix B

Annual growth rates ranging between 1.10 and 5.03 percent were applied to the existing peak hour volumes to estimate future volumes for the years 2026 (opening year) and 2044 (horizon year). These growth rates were estimated based on the TIA's review of data from the KCAG travel demand model. The KCAG travel demand model takes into account in-construction and anticipated to-be-constructed projects, which includes 11 out of the 12

projects identified by the City within a 1.5-mile radius of the Project site. The remaining project (Grangeville Mixed Use Project) is currently under environmental review and the scope of intersections does not overlap with the proposed Project, therefore little to no influence on traffic from the Grangeville Project would occur on the proposed Project. Future peak hour volumes for the years 2026 and 2044 both without and with project traffic include peak hour trip estimates for two tracts of the Live Oak development, a master planned community located northwest, southwest, and southeast quadrants of 12<sup>th</sup> Avenue and Hume Avenue which are under construction. As found in the TIA, there are two intersections that will need improvements by the 2044 year to maintain or improve the operational level of service of the street system in the vicinity of the Project.

Signal warrant criteria was met for the 13<sup>th</sup> Avenue and Hanford Armona Road intersection; however, it is important to note that a signal warrant defines the minimum condition under which signalization of an intersection might be warranted. Meeting this threshold does not suggest traffic signals are required, but rather, that other traffic factors and conditions be considered to determine whether signals are truly justified. Pursuant to General Plan Policy T36, the Project proponent will be required to pay traffic development impact fees. The provision of an intersection signalization would be determined by the City of Hanford. Improvement costs for signalization are within the purview of traffic development impact fees as required in Policy T36, therefore eventual signalization of the intersection by the City would address the LOS deficiency caused by General Plan buildout (2044) and Project development (2044+Project).

For the 12<sup>th</sup> Avenue and Hanford Armona Road intersection, the TIA recommends improvements be made to the eastbound roadway to include changing the existing eastbound right turn lane (EBR) to an eastbound through and right turn lane (EBTR). The Project proponent would be required to pay their fair share cost for the needed improvement to ensure that the intersection by the year 2044, operates at an acceptable LOS. The inclusion of fair share cost payment is recommended as a Mitigation Measure and is included as MM 4.2-1.

Implementation of MM 4.2-1 would allow the studied intersection to operate at an acceptable LOS under City LOS standards and reduce impacts to less than significant.

#### **MITIGATION MEASURES**

MM 4.2-1: The Project proponent or developer shall be required to pay their fair share of costs for the needed improvements. This includes changing the 12<sup>th</sup> Avenue and Hanford Armona Road intersection eastbound right turn lane to an eastbound through lane and a right turn lane.

The fair share cost for the improvement is calculated at 18.94% and shall be collected by the City of Hanford at the appropriate time.

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant with implementation of mitigation measures*.

**Impact 4.2-2 - Conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b)**

The VMT Analysis prepared for this Project (Appendix B) follows the guide of the City of Hanford VMT Thresholds and Implementation Guidelines, dated November 2022 (VMT Guidelines) to analyze the Project's VMT and compare them to the established VMT threshold.

Land use developments meeting one or more of the screening criteria contained in the VMT Guidelines are presumed to create a less than significant transportation impact and no further VMT analysis is required. These criteria relate to project type, size, location, proximity to transit, and trip-making potential. The project does not meet any of the screening criteria. Therefore, a detailed VMT analysis is required and is included as Appendix B.

For projects that are not screened out, a quantitative analysis of VMT impacts must be prepared and compared against the adopted VMT thresholds of significance. According to the VMT Guidelines, residential developments that generate more than 8.99 daily VMT for residential VMT per capita would be considered to have a significant transportation impact.

**Baseline VMT**

The first step in a VMT analysis is to establish the baseline average VMT, which requires the definition of a region. The established region for the Project is Kings County, which is modeled by the KCAG.

Based on the VMT analysis, the Project would result in 9.61 VMT per capita and exceed the 8.99 VMT per capita threshold. As a result, it is recommended that the Project implement VMT mitigation measures for the residential component to reduce VMT per Capita. In order to reduce VMTs, a project must decrease the number of vehicle miles travels to and from the Project site. For land development projects, VMT mitigation focuses on measures that reduce the number and/or length of single-occupant vehicle trips generated by the project. According to the VMT Guidelines, proposed mitigation to reduce project VMT “must be supported by substantial evidence illustrating that the measure(s) will mitigate VMT impacts to less than significant.” The VMT Guidelines cite the Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health Equity: Designed for Local Governments, Communities, and Project Developers, California Air Pollution Control Officers Association, December 2021 (CAPCOA Handbook) as a source for mitigation measures with quantitative methods for estimating VMT reduction. These measures included increasing residential density and providing easy access to high-quality public transit within 0.5 miles of a high frequency transit station. However, the TIA found that no applicable and feasible mitigation measures are available to reduce

VMT below the adopted City threshold. Therefore, the Project is expected to result in a significant transportation impact under CEQA.

#### **MITIGATION MEASURES**

No mitigation measures

#### **LEVEL OF SIGNIFICANCE**

Impacts would be *significant and unavoidable*.

### **Cumulative Setting Impacts and Mitigation Measures**

#### **CUMULATIVE SETTING**

The study area for the analysis of cumulative impacts is the City of Hanford and unincorporated portions of Kings County located adjacent to the city limits. Cumulative impacts are assessed with the proposed Project and the 12 projects located within a one-half mile of the Project site as identified by the City of Hanford. Eleven of the 12 projects are entitled and either under construction or are anticipated to be under construction in the future. The projects that are entitled are included in and are consistent with the General Plan. Therefore, those projects are included in the KCAG travel demand model. The growth rates used to determine future traffic volumes would therefore reflect traffic from these projects. One of the projects is currently under environmental review, the Grangeville Mixed Use Project. A review of the scope of intersections in the Grangeville traffic study did not overlap with any of the intersections included in the Silicon Valley Ranch study. Therefore, there would be little to no influence of traffic from the Grangeville project on the Silicon Valley Ranch project.

#### **CUMULATIVE IMPACTS**

As noted above, use of the KCAG travel demand model and estimates provided in the TIA (Appendix B), impacts related to LOS would be less than significant with mitigation measures incorporated for the proposed Project and for the cumulative year 2044. Based on the analysis in the TIA, cumulative impacts for LOS would be less than significant with mitigation incorporated.

As for VMT, Project impacts are considered significant and unavoidable. This is in large part due to the lack of applicable and feasible VMT mitigation measures. The cumulative impacts for the City of Hanford would be considered significant and unavoidable.

#### **MITIGATION MEASURES**

Implementation of MM 4.17-1.

**CUMULATIVE LEVEL OF SIGNIFICANCE**

Cumulative impacts for LOS would be *less than significant with mitigation incorporated*.

Cumulative impacts for VMT would be *significant and unavoidable*.

**4.3 - Approach to Environmental Analysis**

Section 4.1 of this Draft EIR contains discussions of the environmental setting, regulatory setting, thresholds of significance, and potential environmental impacts related to the construction and operation of the proposed Project. These sections also include a discussion of mitigation measures and the level of significance after the implementation of mitigation measures.

Section 15125(a) of the CEQA Guidelines identifies that an EIR includes a description of the physical environmental conditions in the vicinity of the Project. This environmental setting will normally constitute the baseline physical conditions by which a Lead Agency determines whether an impact is significant.

The study area for the analysis of the Project and cumulative impacts is the Hanford city limits, the portions of Kings County located adjacent to the City. The applicable cumulative projections include growth projections from the Hanford General Plan and the Kings County General Plan.

The regulatory setting includes a discussion of the regulatory environment as it existed prior to the implementation of the Project. There is federal, State, regional, and local regulations identified within each environmental issue discussion, where appropriate. It is acknowledged that although the existing City of Hanford development codes currently guide development within the City.

The impact analysis contains a discussion of Project-specific impacts as well as cumulative impacts. The Project that is evaluated is the construction of 326 single-family residences, internal roads, a 2.86-acre drainage retention basin, and a 3.58-acre park on an approximately 88.9-acre site (Project). Lots will range between 5,000 and 7,000 square feet. Associated utility and right-of-way infrastructure would be developed in accordance with City standards and regulations. Specific components of the Project are not separately evaluated; however, the Project, as a whole, is evaluated. The Project, as a whole, is referred to as the proposed Project or Project, throughout this EIR.

The impacts within the impact analysis section are identified as *no impact*, *less-than-significant impact*, *potentially significant impact*, or *significant impact*. The project-specific impacts address the potential environmental impacts that could occur under the development activity anticipated to occur with the proposed Project.

#### **4.4 - Environmental Topics**

The potential environmental effects associated with the implementation of the proposed Project are analyzed in the following topical environmental issue areas:

- Land Use Planning
- Transportation
- Mandatory Findings of Significance

#### **4.5 - Organization of Issue Areas**

Each environmental issue section contains the following components:

- Introduction - includes a brief discussion of the information used for the analysis.
- Environmental Setting - identifies and describes the existing physical environmental conditions of the Project area associated with each of the impact sections.
- Regulatory Setting - provides an understanding of the regulatory environment that exists prior to the implementation of the Project. This discussion includes the applicable goals, objectives, and policies from the City of Hanford 2035 General Plan as well as other regulations that currently exist.
- Methodology - identifies which criteria, technical documents, or formulas were used to analyze specific environmental impacts.
- Thresholds of Significance - identifies thresholds from Appendix G of the CEQA Guidelines that assist in determining the significance of an impact. Some thresholds include a more detailed discussion to address the City of Hanford's or other local agency's specific significance criteria for the Project area.
- Project Impacts - describes environmental changes to the existing physical conditions that may occur if the proposed Project is implemented and evaluates these changes with respect to the CEQA thresholds of significance. This section includes a Project-specific impact analysis and a cumulative impact analysis. Mitigation measures are identified for the potentially significant project and cumulative impacts, if determined feasible. The mitigation measures are those measures that could avoid, minimize, or reduce an environmental impact. This section also includes a discussion of the level of significance after mitigation that describes the level of impact significance remaining after mitigation measures are implemented.

#### **4.6 - Level of Significance**

Determining the severity of the project and cumulative impacts is fundamental to achieving the objectives of CEQA. CEQA Guidelines Section 15091 requires that decision-makers mitigate, as completely as is feasible, the significant impacts identified in Project EIR. If the

Project EIR identifies any significant unmitigated impacts, CEQA Guidelines Section 15093 requires decision-makers in approving a project to adopt a Statement of Overriding Considerations that explains why the benefits of the project outweigh the adverse environmental consequences identified in the EIR.

The level of significance for each impact examined in this EIR is determined by considering the predicted magnitude of the impact against the applicable threshold. Thresholds are developed using criteria from the CEQA Guidelines and checklist; federal, State, and local regulatory schemes; local/regional plans and ordinances; accepted practice; consultation with agencies and recognized experts; and other professional opinions. When adopting or using thresholds of significance, a Lead Agency may consider thresholds of significance previously adopted or recommended by other public agencies or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence.

#### **4.7 - Format Used for Impact Analysis and Mitigation Measures**

The format adopted in this EIR to present the evaluation of impacts is described and illustrated below.

##### **Summary Heading of Impact**

Impact 4.1-1: An impact summary heading appears immediately preceding the impact description (Summary Heading of Impact in this example). The impact number correlates to the section of the report (4.1 for Aesthetics in this example) and the sequential order of the impact (1 in this example) within that section. To the right of the impact number is the impact statement, which identifies the potential impact, corresponding to CEQA thresholds.

##### **Project Impact Analysis**

A narrative analysis follows the impact statement. The analysis identifies the significant environmental effects of the proposed Project on the environment, based on an examination of the changes in the existing physical conditions in the affected area as they exist at the time the Notice of Preparation is published. Direct and indirect significant effects of the Project on the environment are identified and described for both the short-term and long-term effects. The analysis includes relevant specifics of the area, the resources involved, physical changes, alterations to ecological systems, and changes induced in population distribution, population concentration, the human use of the land (including commercial and residential development), health and safety problems caused by the physical changes, and other aspects of the resource base such as water, historical resources, scenic quality, and public services.

##### **Cumulative Impact Analysis**

A narrative analysis of cumulative impacts follows the project impacts section. The cumulative impacts analysis includes a discussion of the level of impact that would occur if the proposed Project, in combination with cumulative development, as described in Chapter



1 - *Executive Summary* of this EIR, are implemented. If the combined level of impact is *no impact* or *less-than-significant* impact, the Project's incremental effect would be less than cumulatively considerable. If the combined level of impact is *significant*, the Project's incremental effect is determined to be cumulatively considerable. The discussion of cumulative impacts is guided by the standards of practicality and reasonableness and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact.

### **Mitigation Measures**

Mitigation measures to reduce potential project-specific and cumulative impacts include a summary heading and description using the format presented below:

**MM 4.4-1:** Project-specific or cumulative mitigation is identified that would reduce the impact to the lowest degree feasible. The mitigation number links the particular mitigation to the impact section with which it is associated (Impact 4.4-1 in this example).

### **Level of Significance After Mitigation**

This section identifies the resulting level of significance of the project-specific or cumulative impact following mitigation.

## CHAPTER 5 - CONSEQUENCES OF PROJECT IMPLEMENTATION

### 5.1 - Environmental Effects Found to be Less than Significant

Section 15128 of the California Environmental Quality Act (CEQA) Guidelines requires that an Environmental Impact Report (EIR) “contain a statement briefly indicating the reasons that various possible significant effects of a project were determined not to be significant and were therefore not discussed in detail in the EIR.”

The City of Hanford has engaged the public in the scoping of the environmental document. Comments received during scoping have been considered in the process of identifying issue areas that should receive attention in the EIR. The contents of this EIR were established based on the Notice of Preparation (NOP) prepared in accordance with the CEQA Guidelines and on public and agency input received during the scoping process.

After further study and environmental review in this EIR, direct and indirect impacts of the proposed Project (not including cumulative impacts) would be less than significant or could be reduced to less-than-significant levels with mitigation measures for the resource areas listed below.

#### 5.1.1 - POTENTIAL FOR LESS THAN SIGNIFICANT IMPACTS TO OCCUR

##### Aesthetics

- Impact 4.1-3: Substantially degrade the existing visual character or quality of public views of the site and its surroundings. (Public views are those that are experienced from publicly accessible vantage point). If the Project is in an urbanized area, would the Project conflict with applicable zoning and other regulations governing scenic quality
- Impact 4.1-4: Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area

##### Agriculture and Forestry Resources

- Impact 4.2-1: Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use
- Impact 4.2-5: Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use

**Air Quality**

- Impact 4.3-1: Conflict with or obstruct implementation of the applicable air quality plan
- Impact 4.3-2: Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or State ambient air quality standard
- Impact 4.3-3: Expose sensitive receptor to substantial pollutant concentrations
- Impact 4.3-4: Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people

**Biological Resources**

- Impact 4.4-1: Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service
- Impact 4.4-2: Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service
- Impact 4.4-3: Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means
- Impact 4.4-4: Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites

**Cultural Resources**

- Impact 4.5-1: Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5
- Impact 4.5-2: Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5
- Impact 4.5-3: Disturb any human remains, including those interred outside of formal cemeteries

**Energy**

- Impact 4.6-1: Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during Project construction or operation
- Impact 4.6-2: Conflict with or obstruct a state or local plan for renewable energy or energy efficiency

**Geology and Soils**

- Impact 4.7-1: Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving the rupture of a known earthquake fault
- Impact 4.7-2: Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking
- Impact 4.7-3: Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction
- Impact 4.7-4: Directly or indirectly cause potentially substantial adverse effects, including the risk of loss, injury, or death involving landslides
- Impact 4.7-5: Result in substantial soil erosion or loss of topsoil
- Impact 4.7-6: Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse
- Impact 4.7-7: Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property
- Impact 4.7-9: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature

**Greenhouse Gas Emissions**

- Impact 4.8-1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment
- Impact 4.8-2: Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases

**Hazards and Hazardous Materials**

- Impact 4.9-1: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials
- Impact 4.9-2: Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment
- Impact 4.9-3: Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school
- Impact 4.9-4: Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment
- Impact 4.9-5: For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard or excessive noise for people residing or working in the Project area
- Impact 4.9-6: Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan

**Hydrology and Water Quality**

- Impact 4.10-1: Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality
- Impact 4.10-2: Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin
- Impact 4.10-3(i): Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on- or off-site
- Impact 4.10-3(ii): Substantially alter the existing drainage pattern of the site or area, including the alteration of the course of a stream or river or through the addition of impervious surfaces, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site

- Impact 4.10-3(iii): Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff
- Impact 4.10-3(iv): Impede or redirect flood flows
- Impact 4.10-5: Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan

**Land Use and Planning**

- Impact 4.1-2 (Impact 4.11-2 of Appendix G): Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect

**Noise**

- Impact 4.13-1: Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies
- Impact 4.13-2: Generation of excessive ground-borne vibration or ground-borne noise levels

**Population and Housing**

- Impact 4.14-1: Induce substantial unplanned population growth in an area, either directly or indirectly

**Public Services**

- Impact 4.15-1: Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or to other performance objectives for any of the public services for fire protection services
- Impact 4.15-2: Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts in order to maintain acceptable service ratios, response times, or other performance objectives for police protection services
- Impact 4.15-3: Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause

significant environmental impacts in order to maintain acceptable service Ratios, response times, or other performance objectives for school services

- Impact 4.15-4: Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts in order to maintain acceptable service ratios, response times, or other performance objectives for park services
- Impact 4.15-5: Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts in order to maintain acceptable service ratios, response times, or other performance objectives for other public facilities

### **Recreation**

- Impact 4.16-1: Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated

### **Transportation and Traffic**

- Impact 4.17-3: Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)
- Impact 4.17-4: Result in inadequate emergency access

### **Tribal Cultural Resources**

- Impact 4.18-1(i): Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)
- Impact 4.18-1(ii): Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is a resource determined by the Lead Agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code

Section 5024.1, the Lead Agency shall consider the significance of the resource to a California Native American tribe

### **Utilities and Service Systems**

- Impact 4.19-1: Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which would cause significant environmental effects
- Impact 4.19-2: Have sufficient water supplies available to serve the Project from existing entitlements and resources, or are new or expanded entitlements needed
- Impact 4.19-3: Result in a determination by the wastewater treatment provider that serves or may serve the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments
- Impact 4.19-4: Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals
- Impact 4.19-5: Comply with federal, state, and local management and reduction statutes and regulations related to solid waste

### **Wildfire**

- Impact 4.20-1: Substantially impair an adopted emergency response plan or emergency evacuation plan
- Impact 4.20-2: Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose Project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire
- Impact 4.20-3: Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment
- Impact 4.20-4: Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes



### 5.1.2 - POTENTIAL FOR LESS THAN SIGNIFICANT IMPACTS TO OCCUR WITH INCORPORATION OF MITIGATION MEASURES

Potential environmental effects of the Project and mitigation measures are discussed in detail in Chapter 4 of this EIR. After a full analysis, the following effects were determined to be less than significant with the incorporation of mitigation measures.

#### Transportation

- Impact 4.2-1 (Impact 4.17-1 of Appendix G): Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities

### 5.2 - Significant Environmental Effects that Cannot be Avoided

Section 15126.2(b) of the CEQA Guidelines requires that the EIR describe any significant impacts, including those that can be mitigated but not reduced to less-than-significant levels. Potential environmental effects of the project and proposed mitigation measures are discussed in detail in Chapter 4, *Environmental Analysis*, of this EIR.

The environmental impacts determined to be significant and unavoidable are described in Table 5-1, *Summary of Significant Impacts of the Proposed Project*.

**Table 5-1**  
**Summary of Significant Impacts of the Proposed Project**

| Resources                                                                   | Project Impacts                                                                                                                                                                                                                                                                                                                                    | Cumulative Impacts                                                                                                                                                                                                                                                                        |
|-----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Transportation and Traffic<br>Impact 4.2-2<br>(Impact 4.17-2 of Appendix G) | VMT associated with the Project is estimated to be at 9.61 VMT per Capita and would exceed City of Hanford adopted VMT per Capita thresholds of 8.99. Since the Project exceeds the City VMT threshold and no feasible mitigation has been identified to reduce impacts, permanent (operation) impacts are considered significant and unavoidable. | No feasible mitigation measure has been identified that would be feasible and reduce Project impacts to a less than significant impact. For these reasons, the proposed Project would have a <b>significant and unavoidable</b> cumulatively considerable contribution to VMT generation. |

### **5.3 - Growth Inducing Impacts**

Growth inducement can be a result of new development that requires an increase in dwelling units or an increase in employment, removes barriers to development, or provides resources that lead to secondary growth. The Project would add new residential uses and is projected in the City General Plan. As determined in the prepared IS/NOP, the population of the City is expected to grow by more than 50 percent over the next twenty years. The 6<sup>th</sup> Cycle RHNA states that the City of Hanford will need to provide an additional 5,547 dwelling units by 2035. The proposed Project will help the city work toward attaining a sufficient housing supply while also complying with the General Plan buildout.

The Project is situated in a growing urbanized area, where substantial employment and housing opportunities will continue to grow. The Project would accordingly accommodate planned growth and not induce unplanned growth.

With respect to removing barriers to development, such as by providing access to previously undeveloped areas, the Project is not anticipated to result in significant growth inducement. The Project does not include the construction of infrastructure that could provide for future residential development; it does not remove barriers to off-site development.

Although the Project accommodates planned economic growth at suitable locations, the net increase in population on the Project site would be less than significant.

### **5.4 - Significant Irreversible Changes**

As stated in the CEQA Guidelines, an EIR must address any significant irreversible environmental change that would result from project implementation. According to Section 15126.2(c) of the CEQA Guidelines, such a change would occur if one of the following scenarios occurs:

- The Project would involve a large commitment of nonrenewable resources.
- Irreversible damage can result from environmental accidents associated with the Project.
- The proposed consumption of resources is not justified (e.g., the Project would result in the wasteful use of energy).

The environmental effects of the proposed Project are thoroughly discussed in Chapter 4, *Environmental Impact Analysis*, of this EIR and summarized in the Executive Summary. Implementation of the proposed Project would commit nonrenewable resources during any construction activities and future cannabis-related facility operations. Future cannabis-related operations, oil, gas, and other nonrenewable resources would be consumed for the cultivation, manufacturing, distribution, and retail sales of cannabis products. Therefore, an irreversible commitment of nonrenewable resources would occur as a result of the proposed Project. However, assuming that those commitments occur in accordance with the adopted goals, policies, and implementation measures of the Hanford General Plan, as a matter of public policy, those commitments have been determined to be acceptable. The

policies of the Hanford General Plan ensure that any irreversible environmental changes associated with those commitments will be minimized.

## CHAPTER 6 - ALTERNATIVES

### 6.1 - Introduction

The California Environmental Quality Act (CEQA) requires that an Environmental Impact Report (EIR) describe a range of reasonable alternatives to the Project or to the location of the Project site that could feasibly avoid or lessen any significant environmental impacts of the Project while attaining most of the Project's basic objectives. An EIR also must compare and evaluate the environmental effects and comparative merits of the alternatives. This chapter describes alternatives considered but eliminated from further consideration, including the reasons for elimination, and compares the environmental impacts of several alternatives retained with those of the Project.

The following are key provisions of the CEQA Guidelines (Section 15126.6):

- The discussion of alternatives shall focus on alternatives to the Project or its location that are capable of avoiding or substantially lessening any significant effects of the Project, even if these alternatives would impede to some degree the attainment of the Project objectives or would be costlier.
- The No Project Alternative shall be evaluated, along with its impacts. The no project analysis shall discuss the existing conditions at the time the Notice of Preparation was published, as well as what would be reasonably expected to occur in the foreseeable future if the Project were not approved, based on current plans and consistent with available infrastructure and community services.
- The range of alternatives required in an EIR is governed by a "rule of reason;" therefore, the EIR must evaluate only those alternatives necessary to permit a reasoned choice. The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the Project.
- For alternative locations, only locations that would avoid or substantially lessen any of the significant effects of the Project need to be considered for inclusion in the EIR.
- An EIR need not consider an alternative whose effects cannot be reasonably ascertained and whose implementation is remote and speculative.

The range of feasible alternatives is selected and discussed in a manner to foster meaningful public participation and informed decision-making. Among the factors that may be taken into account when addressing the feasibility of alternatives, as described in Section 15126.6(f)(1) of the CEQA Guidelines, are environmental impacts, site suitability, economic viability, availability of infrastructure, general plan consistency, regulatory limitations, jurisdictional boundaries, and whether the Project proponent could reasonably acquire, control, or otherwise have access to an alternative site. An EIR need not consider an alternative whose effects could not be reasonably identified, whose implementation is remote or speculative, and that would not achieve the basic project objectives.

Under case law and CEQA Section 15126.6(f), the discussion of alternatives need not be exhaustive and is subject to a rule of reason. CEQA Section 15126.6(d) states that “if an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternatives shall be discussed, but in less detail than the significant effects of the project as proposed.” Determining factors that may be used to eliminate alternatives from detailed consideration in an EIR are (a) failure to meet most of the basic project objectives, (b) infeasibility, or (c) inability to avoid significant environmental impacts. CEQA Section 15364 defines “feasibility” as “Capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.”

The Project has the potential to have significant adverse effects, at either a project level or cumulative level, on aesthetics, agriculture, air quality, biological resources, greenhouse gas emissions, noise, population, and housing at the Project site. Even with the mitigation measures described in Chapter 4, *Environmental Analysis*, of this EIR, impacts in these issue areas would be significant and unavoidable. Therefore, per the CEQA Guidelines, this section discusses alternatives that are capable of avoiding or substantially lessening the effects on these resources. Significant, unavoidable impacts of the Project are summarized below. Following these summaries, Section 6.2, *Project Objectives*, restates the Project proponent’s objectives. Section 6.3, *Alternatives Eliminated from Further Consideration*, presents alternatives to the Project that were considered but eliminated for further analysis. Section 6.4, *Alternatives Analyzed in This EIR*, presents alternatives fully analyzed in this EIR, provides a comparison of alternatives, and makes a determination about the environmentally superior alternative.

### **6.1.1 - SIGNIFICANT IMPACTS OF THE PROJECT**

The implementation of the proposed Project would result in significant and unavoidable impacts and significant impacts prior to mitigation incorporated. These potential significant and unavoidable impacts and less-than-significant impacts with mitigation incorporated are evaluated for each of the alternatives that are considered and evaluated as discussed below.

#### **No Potential for Impacts to Occur**

Potential environmental effects of the Project and mitigation measures are discussed in detail in Chapter 4 of this EIR. After a full analysis, the following effects were determined to have no potential for impacts to occur:

#### **Aesthetics**

- Impact 4.1-1: Have a substantial adverse effect on a scenic vista
- Impact 4.1-2: Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway

**Agriculture and Forest Resources**

- Impact 4.2-2: Conflict with existing zoning for agricultural use or a Williamson Act contract
- Impact 4.2-3: Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), or timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Productions (as defined in Government Code Section 51104(g))
- Impact 4.2-4: Result in the loss of forest land or conversion of forest land to non-forest use

**Biological Resources**

- Impact 4.4-5: Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance
- Impact 4.4-6: Conflict with provisions of an adopted habitat conservation plan, natural communities conservation plan, or other approved local, regional, or State habitat conservation plan

**Geology and Soils**

- Impact 4.7-8: Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater

**Hazards and Hazardous Materials**

- Impact 4.9-7: Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires

**Hydrology and Water Quality**

- Impact 4.10-4: In flood hazard, tsunami, or seiche zones, risk release of pollutants due to Project inundation

**Land Use and Planning**

- Impact 4.11-1: Physically divide an established community

**Mineral Resources**

- Impact 4.12-1: Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State

- Impact 4.12-2: Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan

### Noise

- Impact 4.13-3: For a Project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels

### Population and Housing

- Impact 4.14-2: Displace substantial number of existing people or housing necessitating the construction

### Recreation

- Impact 4.16-2: Include recreational facilities or require construction or expansion of recreational facilities that might have an adverse physical effect on the environment

### **Potential for Less than Significant Impacts**

Potential environmental effects of the Project and mitigation measures are discussed in detail in Chapter 4 of this EIR. After a full analysis, the following effects were determined to have less than significant impacts to occur:

### Aesthetics

- Impact 4.1-3: Substantially degrade the existing visual character or quality of public views of the site and its surroundings. (Public views are those that are experienced from a publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality
- Impact 4.1-4: Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area

### Agriculture and Forest Resources

- Impact 4.2-1: Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use
- Impact 4.2-5: Involve other changes in the existing environment which, because of their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use

**Air Quality**

- Impact 4.3-1: Conflict with or obstruct implementation of the applicable air quality plan
- Impact 4.3-2: Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or State ambient air quality standard
- Impact 4.3-3: Expose sensitive receptors to substantial pollutant concentrations
- Impact 4.3-4: Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people

**Biological Resources**

- Impact 4.4-1: Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service
- Impact 4.4-2: Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service
- Impact 4.4-3: Have a substantial adverse effect on State or federally Protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means
- Impact 4.4-4: Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites

**Cultural Resources**

- Impact 4.5-1: Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5
- Impact 4.5-2: Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5
- Impact 4.5-3: Disturb any human remains, including those interred outside of dedicated cemeteries



**Energy**

- Impact 4.6-1: Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during Project construction or operation
- Impact 4.6-2: Conflict with or obstruct a State or local plan for renewable energy or energy efficiency

**Geology and Soils**

- Impact 4.7-1: Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving the rupture of a known earthquake fault
- Impact 4.7-2: Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking
- Impact 4.7-3: Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction
- Impact 4.7-4: Directly or indirectly cause potentially substantial adverse effects, including the risk of loss, injury, or death involving landslides
- Impact 4.7-5: Result in substantial soil erosion or loss of topsoil
- Impact 4.7-6: Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse
- Impact 4.7-7: Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property
- Impact 4.7-9: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature

**Greenhouse Gas Emissions**

- Impact 4.8.1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment
- Impact 4.8.2: Conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases

### Hazards and Hazardous Materials

- Impact 4.9-1: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials
- Impact 4.9-2: Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment
- Impact 4.9-3: Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school
- Impact 4.9-4: Create a hazard to the public or the environment as a result of being located on a site that is included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5
- Impact 4.9-5: For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard or excessive noise for people residing or working in the Project area
- Impact 4.9-6: Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan

### Hydrology and Water Quality

- Impact 4.10-1: Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality
- Impact 4.10-2: Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin
- Impact 4.10-3(i): Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on- or off-site
- Impact 4.10-3(ii): Substantially alter the existing drainage pattern of the site or area, including the alteration of the course of a stream or river or through the addition of impervious surfaces, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site
- Impact 4.10-3(iii): Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the

addition of impervious surfaces, in a manner which would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantially additional sources of polluted runoff

- Impact 4.10-3(iv): Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would impede or redirect flood flows
- Impact 4.10-5: Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan

### Land Use and Planning

- Impact 4.1-2 (Impact 4.11-2 of CEQA Appendix G): Cause a significant environmental impact due to a conflict with any land use plan, policy or regulation adopted for the purpose of avoiding or mitigating an environmental effect

### Noise

- Impact 4.13-1: Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance or applicable standards of other agencies
- Impact 4.13-2: Generation of excessive ground-borne vibration or ground-borne noise levels

### Population and Housing

- Impact 4.14-1: Induce substantial unplanned population growth in an area, either directly or indirectly

### Public Services

- Impact 4.15-1: Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts in order to maintain acceptable service ratios, response times, or other performance objectives for fire protection
- Impact 4.15-2: Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts in order to maintain acceptable service ratios, response times, or other performance objectives for police protection services

- Impact 4.15-3: Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts in order to maintain acceptable service Ratios, response times, or other performance objectives for school services
- Impact 4.15-4: Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts in order to maintain acceptable service ratios, response times, or other performance objectives for park services
- Impact 4.15-5: Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts in order to maintain acceptable service ratios, response times, or other performance objectives for other public facilities

### Recreation

- Impact 4.16-1: Result in increased use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration would occur or be accelerated

### Transportation

- Impact 4.17-3: Substantially increase hazards due to a geometric design feature or incompatible uses
- Impact 4.17-4: Result in inadequate emergency access

### Tribal Cultural Resources

- Impact 4.18-1: Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is listed or eligible for listing in the California register of historical resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)
- Impact 4.18-2: Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is a resource determined by the lead agency, in its

discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in Subdivision (c) of Public Resources Code Section 5024.1

### Utilities and Service Systems

- Impact 4.19-1: Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects
- Impact 4.19-2: Have sufficient water supplies available to serve the Project from existing entitlements and resources, or are new or expanded entitlements needed
- Impact 4.19-3: Result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments
- Impact 4.19-4: Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals
- Impact 4.19-5: Comply with federal, State, and local management and reduction statutes and regulations related to solid waste

### Wildfire

- Impact 4.20-1: Substantially impair an adopted emergency response plan or emergency evacuation plan
- Impact 4.20-2: Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose Project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire
- Impact 4.20-3: Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment
- Impact 4.20-4: Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes

**Potential for Less than Significant Impacts to Occur with Incorporation of Mitigation Measures**

Potential environmental effects of the Project and mitigation measures are discussed in detail in Chapter 4 of this EIR. After a full analysis, the following effect was determined to be less than significant with the incorporation of mitigation measures.

**Transportation**

- Impact 4.2-1 (Impact 4.17-1 of CEQA Appendix G): Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities

**Potential for Significant and Unavoidable Impacts to Occur**

Potential environmental effects of the Project and mitigation measures are discussed in detail in Chapter 4 of this EIR. After a full analysis, the following effects were determined to have potential for significant and unavoidable impacts to occur:

**Transportation**

- Impact 4.2-2 (Impact 4.17-2 of CEQA Appendix G): Conflict or be inconsistent with CEQA Guidelines 15064.3, Subdivision (b)

**6.1.2 - OTHER IMPACTS OF THE PROJECT**

Impacts of the Project on the other resources evaluated in this EIR were found to be either less than significant or less than significant after mitigation. Therefore, consideration of alternatives that would further reduce impacts on these resources is not required by CEQA. Only alternatives that reduce or substantially lessen the Project's impacts on aesthetics, agriculture, air quality, biological resources, greenhouse gas emissions, noise, or population and housing are considered in this EIR. If one of the alternatives would cause a greater adverse impact on another resource, these impacts are disclosed in Section 6.4, *Alternatives Analyzed in this EIR*. Otherwise, impacts to the remaining resources evaluated in this EIR are not discussed further in this section.

**6.2 - Project Objectives**

The Project has the following objectives:

1. Provide a variety of housing opportunities with a range of styles, sizes, and values that will be designed to satisfy existing and future demand for quality housing in the area.

2. Provide a sense of community and walkability within the development through the use of street patterns, parks/open space areas, landscaping, and other Project amenities.
3. Create a successful and financially feasible Project by meeting the housing needs of the area.
4. Provide a residential development that assists the City in meeting its General Plan and Housing Element requirements and objectives.

CEQA requires that an EIR describe a reasonable range of alternatives to the Project, or to the location of the Project, that would avoid or substantially lessen any of the significant effects of the Project and that would feasibly attain most of the basic Project objectives (Title 14, Section 15126.6). Attainment of the Project objectives is discussed for each retained alternative in Section 6.4.

### **6.3 - Alternatives Considered but Rejected**

There are no Project alternatives that were considered and rejected.

### **6.4 - Alternatives Considered and Evaluated**

An evaluation of three alternatives that were considered and evaluated is provided below. These alternatives represent a reasonable range of alternatives to the proposed Project. This analysis includes alternatives that could feasibly accomplish some of the basic objectives of the proposed Project and could potentially avoid or substantially lessen one or more of the significant effects. The following is an evaluation of each of the alternatives to the proposed Project that were further considered for analysis. Table 6-1, below, provides a summary of the impacts comparison between the proposed Project and the Project alternatives.

#### **6.4.1 - ALTERNATIVE A - NO PROJECT ALTERNATIVE**

Under the No Project Alternative, the Project area would remain unchanged and there would be no residential units or parks constructed. The No Project Alternative would keep the site as agriculture and remain under the jurisdiction of Kings County. As no change would occur, the Project site would continue to be consistent with the Kings County General Plan land use designation and zoning of Limited Agriculture, 10 acres (AL10). The City is also required to meet the State Regional Housing Needs Allocation (RHNA) for new housing in the City under the Housing Element of the City General Plan. The No Project Alternative would not fulfill the objectives of the Project or assist the City in meeting RHNA. With regard to transportation impacts, the No Project Alternative would result in no new trips generated. Therefore, the No Project Alternative would reduce the less than significant impact associated with LOS thresholds and significant and unavoidable impact relating to VMT. However, the City is required to meet the State Regional Housing Needs Allocation (RHNA) for new housing in

the City. The No Project Alternative would not fulfill the objectives of the Project or assist the City in meeting RHNA.

#### **6.4.2 - ALTERNATIVE B - REDUCED PROJECT ALTERNATIVE**

This alternative would decrease the number of single-family residential houses from 326 to 242. As described in this draft EIR, the proposal to approve the tentative tract map, annex the site into the City, and rezoning the site to R-L-5 would remain the same. With **Alternative B** a similar outcome to the proposed Project would occur with regard to County and City General Plan consistency. The annexation would meet County and LAFCo objectives in addition to providing planned City expansion within their SOI. This alternative will meet all Project objectives but would have a reduced positive effect of assisting the City in meeting regional housing needs. Under **Alternative B**, overall VMT for the Project would decrease; however, per capita VMT impacts of significant and unavoidable would remain the same as the proposed Project. With regard to City LOS thresholds, overall trip generation would be reduced, resulting in lessened impacts on studied intersections. However, this reduction is still likely to exceed LOS thresholds cumulatively, and require mitigation as indicated in this draft EIR to improve the impacted intersection of 12<sup>th</sup> Avenue and Hanford Armona Road. Impacts regarding LOS would continue to be *less than significant with mitigation incorporated*.

#### **6.4.3 - ALTERNATIVE C – MULTI-FAMILY ALTERNATIVE**

This alternative would replace the proposed single-family residential with multi-family apartments at a density of at least 14.5 dwelling units per gross acre (1,088 units). The Project site is currently designated by the General Plan for low-density residential and rezoned R-L-5. The proposed Project request would be modified to include a General Plan Amendment and a Zone Change to Medium Density Residential (R-M) to allow multi-family apartments. With regard to the addition of a General Plan Amendment, consistency findings with General Plan goals and policies would be necessary to determine if the proposed Medium Density Residential land use would comply. However, due to its proximity to designated Medium Density Residential land northerly adjacent to the Project site, consistency findings can likely be made as availability of City services, implementation of pedestrian, bicycle, and vehicle standards, and payment of impact fees would still be applicable to the development.

Under **Alternative C**, the overall density increase would result in higher trips generated. This would, in turn, cause impacts to LOS and VMT. For LOS, a rise in vehicle trips generated due to an increased number of residents originating from the Project site would result in higher utilization of intersections in the vicinity of the site. Based on this assumption, the higher utilization could negatively impact LOS for the studied intersections and would potentially require additional mitigation/improvements to intersections to meet LOS standards.

Therefore, **Alternative C** could result in an increased impact with regard to City LOS standards. In regard to VMT, the City of Hanford has adopted VMT Thresholds and Implementation Guidelines, which was utilized for the proposed Project to determine



impacts. With regard to the adopted screening criteria and VMT thresholds, **Alternative C** does not meet the screening criteria and would likely generate more than 1,000 average daily trips, is not located within 0.5 miles of a transit priority area and is not located within an area where existing VMT per capita is low. The City's VMT Guidelines cite the *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health Equity: Designed for Local Governments, Communities, and Project Developers*, California Air Pollution Control Officers Association, December 2021 (CAPCOA Handbook) as a source for measures with quantitative methods for estimating VMT reduction. It was found that the in CAPCOA Handbook, that an increase in density over the national average (9.1 dwelling units per acre) can result in a VMT reduction. Assuming no change in the amount of developable land, the project would need at least 455 dwelling units to reach the national average and be credited for any reduction in project VMT. Moreover, the project would require a total of 590 dwelling units to mitigate the impact of project VMT to a less-than-significant level. (Ruetters and Schuler Civil Engineers, 2024). As **Alternative C** proposes a density larger than the national average, it can be seen that a reduction in Project VMT would occur. Therefore, VMT under **Alternative C** would result in a less than significant impact.

#### 6.4.4 - ALTERNATIVE D – DIFFERENT SITE ALTERNATIVE

This alternative would relocate the Project to a different site in order to be located nearer to corridor mixed use where a mix of commercial and office uses would be available in addition to being located closer to major transit corridors. This alternative would locate the Project on the east side of the City, bounded by Lacey Boulevard to the south, 9 1/4 Avenue to the west, State Route 43 to the east, and Grangeville Boulevard to the north. This alternative will meet all Project objectives and would assist the City in meeting its regional housing needs.

Additionally, **Alternative D** would result in similar conditions as the proposed Project, consistency findings with Kings County and LAFCo for annexation, and General Plan conformity with the City can be made. With regard to LOS standards, the alternative site would require an analysis of intersections in the vicinity of the site and the comparisons of future conditions at the chosen intersections. It can be determined that under **Alternative D**, impacts to LOS at intersections could occur similar to the proposed Project. Dependent on the LOS grade found as a result of Project implementation, mitigation measures for intersection improvements and the use of transportation impact fees per General Plan policy would be applicable to **Alternative D** and therefore result in similar impacts as the proposed Project.

Under **Alternative D**, overall VMT per capita for the Project would still exceed City VMT thresholds as the majority of the site is located within a high VMT area (Kings County Council of Governments, 2020) in addition to no changes made to the Project lot count. Therefore, per capita, VMT would remain similar to the proposed Project as there are no other factors including proximity to high-quality transit corridors that could provide VMT reductions. Impacts would continue to be *significant and unavoidable*. In addition, the applicant does not currently own either of these properties and it is not known if the current owners are willing to sell these properties.

## **6.5 - Environmentally Superior Alternative**

CEQA requires that the City identify an Environmentally Superior Alternative. If the No Project Alternative is the Environmentally Superior Alternative, the City must identify an Environmentally Superior Alternative among the other alternatives considered in the EIR (CEQA Guidelines, Section 15126.6). This alternatives analysis includes three other Project alternatives –Alternative B - Reduced Project, Alternative C - Multi-Family, and Alternative D - Different Site. Based on the evaluation of the three alternatives, Alternative C – Multi-Family would reduce significant and unavoidable environmental impacts relating to VMT while fulfilling most of the objectives of the proposed Project and is therefore the Environmentally Superior Alternative.

**Table 6-1  
Summary of Alternatives Impacts**

| <b>Environmental Resource</b>                                                                                                                                                                             | <b>Project</b>                                     | <b>Alternative<br/>A</b> | <b>Alternative<br/>B</b> | <b>Alternative<br/>C</b> | <b>Alternative<br/>D</b> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Land Use and Planning: Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect | Less than significant                              | Similar                  | Similar                  | Similar                  | Similar                  |
| Land Use and Planning: Cumulative Impacts associated with land use plan, policy, or regulation                                                                                                            | Less than significant                              | Similar                  | Similar                  | Similar                  | Similar                  |
| Transportation and Traffic: Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities                         | Less than significant with mitigation incorporated | Fewer                    | Fewer                    | Similar                  | Similar                  |
| Transportation and Traffic: Cumulative Impacts associated with LOS                                                                                                                                        | Less than significant with mitigation incorporated | Fewer                    | Fewer                    | Similar                  | Similar                  |
| Transportation and Traffic: Conflict or be Inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b)                                                                                             | Significant / Unavoidable                          | Fewer                    | Similar                  | Fewer                    | Similar                  |
| Transportation and Traffic: Cumulative Impacts associated with VMT                                                                                                                                        | Significant / Unavoidable                          | Fewer                    | Similar                  | Fewer                    | Similar                  |
| Meet Project Objectives                                                                                                                                                                                   | Yes                                                | No                       | Yes                      | Yes                      | Yes                      |
| Reduce Any Significant and Unavoidable Impacts to No Impact or Less than Significant                                                                                                                      | No                                                 | Yes                      | No                       | Yes                      | No                       |

## **CHAPTER 7 - RESPONSE TO COMMENTS**

This chapter is being reserved for and will be included as the Final EIR.

## CHAPTER 8 - ORGANIZATIONS AND PERSONS CONSULTED

Note: All of the below entities were either notified or contacted directly to ask for or directly receive consultation on their applicable area of expertise with respect to this proposed Project. This may not be an all-inclusive list.

### ***Federal Agencies***

- U.S. Department of Agriculture/Natural Resources Conservation Service
- U.S. Environmental Protection Agency—Region IX
- U.S. Fish and Wildlife Service

### ***State Agencies***

- California Air Resources Board
- California Highway Patrol
- California Department of Conservation
- California Department of Toxic Substances Control
- California Department of Parks and Recreation
- California State Department of Water Resources
- California Department of Fish and Wildlife
- California Department of Forestry and Fire Protection
- California Department of Health Services
- Native American Heritage Commission
- California Department of Transportation District 6
- Regional Water Quality Control Board/Central Valley Region
- State Clearinghouse Office of Planning and Research

### ***Regional and Local***

- Kings County Public Works Department
- Kings County Sheriff's Department
- City of Hanford Public Works Department
- City of Hanford Community Development Department
- City of Hanford Parks & Recreation Department
- City of Hanford Police Department
- City of Hanford Airport Department
- Hanford Elementary School District
- Hanford Joint Union High School District
- Pacific Gas & Electric Company
- San Joaquin Valley Unified Air Pollution Control District
- Southern San Joaquin Valley Information Center
- Southern California Gas Company
- Southern California Edison

***Native American Consultation***

In accordance with Assembly Bill 52 and the California Tribal Consultation guidelines, the appropriate native groups were consulted with respect to the Project's potential impacts on Native American places, features, and objects. As of the writing of this report, staff have not received any comments from consulted tribes regarding the department's AB 52 request. Staff notes consultation with appropriate Native American groups per AB 52 requirements has occurred.

## **CHAPTER 9 - LIST OF PREPARERS**

### ***Lead Agency***

#### ***CITY OF HANFORD***

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Gabrielle Myers – Senior Planner, Community Development Department

### ***Technical Assistance***

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#### ***RUETTIGERS & SCHULER, CIVIL ENGINEERS***

Ian Parks, RCE

#### ***GEO TECK, INC***

Kyle R. McHargue, CEG, Project Geologist  
Anna M. Scott, Project Geologist

## CHAPTER 10 - REFERENCES

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**PHASE I AND LIMITED PHASE II ENVIRONMENTAL SITE ASSESSMENT  
VESTING TENTATIVE SUBDIVISION MAP NO. 943  
APNs 011-040-008, 011-040-010, AND 011-040-027  
HANFORD, KINGS COUNTY, CALIFORNIA 93230**

July 1, 2024

Project No. 3951-CR

Prepared For:

**K. Hovnanian California Region, Inc.**  
1260 Corona Pointe Court, Suite 301  
Corona, California 92879





**GeoTek, Inc.**

1548 North Maple Street, Corona, California 92878  
(951) 710-1160 Office (951) 710-1167 Fax [www.geotekusa.com](http://www.geotekusa.com)

July 1, 2024  
Project No. 3951-CR

**K. Hovnanian California Region, Inc.**  
1260 Corona Pointe Court, Suite 301  
Corona, California 92879

Attention: Mr. Isaac Vazquez

Subject: **Phase I and Limited Phase II Environmental Site Assessment**  
Vesting Tentative Subdivision Map No. 943  
APNs 011-040-008, 011-040-010, and 011-040-027  
Hanford, Kings County, California 93230

Dear Mr. Vazquez:

GEO TEK, INC. (GEO TEK) is pleased to present this Phase I and Limited Phase II Environmental Site Assessment for the above-referenced subject Site. Services were conducted in substantial conformance with the scope and limitations of the American Society of Testing and Materials E 1527-21, “*Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*,” which is approved to meet the requirements of the federal All Appropriate Inquiries (AAI) standards as set forth in the Code of Federal Regulations, Title 40, Section 312 (40 CFR 312), and GEO TEK’s Proposal No. P-0401724-CR dated April 4, 2024.

Based on the investigation, this Phase I and Limited Phase II Environmental Site Assessment has not revealed evidence of a recognized environmental condition in connection with the subject Site. No further investigation is recommended at this time.

GEOtek appreciates this opportunity to be of service. If you have any questions, or if GEOtek can be of further service, please contact the office at (951) 710-1160.

Sincerely,  
**GEOtek, INC.**



Kyle R. McHargue  
Project Geologist, CEG 2790  
Expires 02/28/2026

Anna M. Scott  
Project Geologist

## EXECUTIVE SUMMARY

GEOTEK, INC. (GEOTEK) has performed a Phase I and Limited Phase II Environmental Site Assessment (ESA) for the Vesting Tentative Subdivision Map No. 943 (the “Site”), located in the City of Hanford, Kings County, California. GEOTEK’s services were conducted in substantial conformance with the scope and limitations of the American Society of Testing and Materials (ASTM) E 1527-21, “*Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*”, which is approved to meet the requirements of the federal All Appropriate Inquiries (AAI) standards as set forth in the Code of Federal Regulations, Title 40, Section 312 (40 CFR 312), and GEOTEK Proposal No. P-0401724-CR, dated April 4, 2024. Any additions or deletions from the scope of services are discussed in the appropriate sections of this assessment.

A representative of GEOTEK conducted a Site reconnaissance on June 11, 2024. The weather was warm, and the sky was clear. The irregular shaped Site is currently comprised of three (3) parcels of land (Kings County Assessor’s Parcel Numbers (APNs) 011-040-008, 011-040-010, and 011-040-027). The parcels encompass a total of approximately 88.91 acres. The Site can generally be accessed from Hanford Armona Drive to the north.

The Site is currently vacant land being utilized for agricultural operations. Visual evidence of hazardous substances and wastes was not observed during the Site reconnaissance. No visual indication of spills or leaks were observed. No pungent or acrid odors were observed emanating from the Site.

The Site is in an area largely characterized by residential development, vacant land or agricultural land. The Site is bound to the north by Hanford Armona Road, followed by residences (12358-12458 Hanford Armona Road) and agricultural land. The Site is bound to the east by residential development (1983 and 1984 West Idlewood Way; 1986 West Concord Way; 1100-1198, 1224-1380, 1400-1490 Greenbrier Drive; and 1978 West Summer Blossom Way). Agricultural land bounds the Site to the south. Agricultural land and residences (12645 and 12633 Hanford Armona Road) bound the Site to the west. None of the adjoining properties appear to represent a recognized environmental condition or environmental concern to the Site.

The Site does not appear on the environmental database report obtained for this assessment.

There are two (2) facilities listed in the database report within the various search distances specified by ASTM E 1527-21. Due to facility status; distance; lack of violations, spills or leaks; investigations or clean-ups; and/or locations hydro-geologically down- or cross-gradient, it is



GEOTEK's opinion that these facilities have not created a recognized environmental condition to the Site.

Based on readily available historical information, the Site appears to have been primarily utilized for agricultural purposes with a structure in the northwest portion of the Site in an aerial photograph dated 1934. The structure appears to be razed in a 1937 aerial photograph. The Site appears to be entirely utilized for agricultural operations from at least 1950 to the present.

The surrounding areas appear to be generally utilized for agricultural operations and/or vacant land with scattered residences from at least 1934 until at least 1950. Residential tract development is first visible to the east of the Site in an aerial photograph dated 1974. Additional residences are visible to the east of the Site in an aerial photograph dated 1976. There are no significant changes in the surrounding areas visible in the 1984 and 1994 aerial photographs. A residential tract development and religious building are visible to the north of the Site in an aerial photograph dated 2006. Additional residences are visible to the east of the Site in aerial photographs dated 2009 and 2016, 2020 and 2024.

Historically, some agricultural sites have utilized pesticides that are currently considered a health risk and no longer used. This particular environmental concern was investigated by GEOTEK as part of this assessment. Near surface soil samples were collected from the Site and were analyzed for organo-chlorinated pesticides (EPA Method 8081) and arsenic (EPA Method 6010B). The laboratory testing concluded that organo-chlorinated pesticides and arsenic were not detected above regional screening levels for residential soils in the soil samples tested. Based on this laboratory testing, it is GEOTEK's opinion that the historical agricultural use on the subject Site is not considered an environmental concern.

Based on the investigation, this Phase I and Limited Phase II Environmental Site Assessment has not revealed evidence of a recognized environmental condition in connection with the subject Site. No further investigation is recommended at this time.

This executive summary does not contain all the information that is found in the full report. The report should be read in its entirety to obtain a more complete understanding of the information provided and to aid in any decisions made or actions taken based on this information.

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## **I.0 INTRODUCTION**

GEO TEK, INC. (GEO TEK) has performed a Phase I and Limited Phase II Environmental Site Assessment (ESA) for the Vesting Tentative Subdivision Map No. 943 (the “Site”), located in the City of Hanford, Kings County, California.

### **I.1 PURPOSE**

The purpose of this Phase I and Limited Phase II ESA was to identify and evaluate actual and potential environmental conditions involving the subject Site. It was not the purpose of this assessment to determine the degree or extent of contamination, if any, but rather the potential for contamination.

### **I.2 SCOPE OF WORK**

The Phase I and Limited Phase II ESA is a general characterization of environmental concerns based on reasonably ascertainable information and observations. GEO TEK performed the Phase I and Limited Phase II ESA in substantial accordance with ASTM Standard E 1527-21. The following services were provided for the assessment:

- A reconnaissance of the Site and surrounding properties to visually assess current utilization and indications of potential surface contamination. This was accomplished by driving the Site boundaries, and then traversing the Site until the entire Site had been surveyed.
- A reconnaissance of the surrounding area for approximately one-half mile was conducted, without entering the properties, making observations concerning property uses, conditions, and housekeeping.
- Interviews were conducted, either in person, via telephone, or via a written questionnaire(s) with the client representative, the seller’s representative, and/or appropriate regulatory agency personnel.
- A review of the geologic and hydro-geologic settings was conducted using reasonably ascertainable public records and documents.
- An environmental database report was obtained from a data service provider. This database report compiles and locates documented “hazardous waste” facilities within specific minimum search distances as defined by ASTM E 1527-21. If necessary,

additional information on identified facilities was gathered by a file review at the appropriate federal, state, local, and/or tribal regulatory agency.

- A review of reasonably ascertainable historical records (including aerial photographs, topographic maps, building records, and city directories) was conducted to assess the historical land utilization and indications of potential contamination or sources of contamination for the Site.
- Collection of twelve (12) soil samples collected from specific locations on the Site and laboratory testing of the soil samples for arsenic and organo-chlorinated pesticides.
- This report was prepared, which relates the findings of this study and presents the conclusions and recommendations.

Specific items not included in this Scope of Services are additional soil analysis, water analysis, asbestos containing materials analysis, radon analysis, lead-based paint analysis, lead in drinking water, wetlands, regulatory compliance, cultural and historic resources, industrial hygiene, health and safety, ecological resources, endangered species, indoor air quality, vapor intrusion testing, high voltage power lines, and other items not within the scope of ASTM E 1527-21.

### I.3 SIGNIFICANT ASSUMPTIONS

Specific assumptions by GEOTEK for this assessment include:

- GEOTEK had permission to access the Site grounds;
- The client has provided GEOTEK with available geotechnical or environmental reports for the Site;
- The client has provided GEOTEK with known current or historic uses of hazardous materials at the Site, or with other specialized knowledge of the environmental history of the Site and surrounding area;
- The client is not the sole and absolute source of information;
- The seller has provided proper and complete access to their knowledge, both written and verbal, and GEOTEK can rely on the information.

#### I.4 LIMITATIONS AND EXCEPTIONS

GEOTEK conducted a Phase I and Limited Phase II Environmental Site Assessment in substantial accordance with ASTM E 1527-21 and as authorized by K. HOVNANIAN CALIFORNIA REGION, INC. This study does not include sampling of groundwater and/or materials on-site for environmental testing. This report is intended for the use of K. HOVNANIAN CALIFORNIA REGION, INC. The contents should not be relied upon by any party other than the aforementioned without the express written consent of GEOTEK.

The findings, conclusions, and recommendations made in this report are based on the information that was made available to GEOTEK, in most instances from public records. The information is relevant to the date of the sitework and should not be relied on to represent conditions at any later date. The opinions and conclusions expressed herein are based on information obtained during the assessment and on experience and current standards of technical practice. GEOTEK makes no other warranties, either express or implied, concerning the completeness of the data furnished to us. GEOTEK cannot be responsible for conditions or consequences arising from relevant facts that were concealed, withheld, or not fully disclosed at the time the assessment was undertaken. GEOTEK is not responsible, nor liable for work, testing or recommendations performed or provided by others. This Phase I and Limited Phase II Environmental Site Assessment is not and should not be construed as a warranty or guarantee about the presence or absence of environmental hazards or contaminants which may affect the subject Site. Facts, conditions, and acceptable risk factors change with time; accordingly, this report should be viewed within this context.

Specific limitations to the scope of ASTM E 1527-21 due to contract limitations, availability of resources, and/or encountered Site conditions are discussed in the appropriate sections of this report.

#### I.5 SPECIAL TERMS AND CONDITIONS

This assessment report is presented as fulfilling the standard requirements of most financial institutions, governmental regulatory agencies, ASTM, and generally accepted industry standards and practices. Please refer to GEOTEK Proposal No. P-0401724-CR for complete terms and conditions for this assessment.

## I.6 RELIANCE

This assessment has been prepared for its exclusive use, and may be relied upon by K. HOVNANIAN CALIFORNIA REGION, INC., their successors and assignees. Third party reliance letters may be issued upon request and upon the payment of the, then current, fee for such letters. All third parties relying on this report, by such reliance, agree to be bound by the General Conditions and Limitations agreed by K. HOVNANIAN CALIFORNIA REGION, INC. No reliance by any party is permitted without such agreement, regardless of the content of the reliance letter itself.

## **2.0 DESCRIPTION OF SITE AND SURROUNDING AREA**

The objective of describing the Site and surrounding area is to document current conditions as observed and to obtain information which would indicate the likelihood of a recognized environmental condition in connection with the Site. A representative of GEOTEK conducted a Site reconnaissance on June 11, 2024. The weather was warm, and the sky was clear. The Site can generally be accessed from Hanford Armona Drive to the north.

### **2.1 SITE LOCATION AND LEGAL DESCRIPTION**

The Site is located southeasterly of the intersection of Hanford Armona Drive and Turner Drive, in the City of Hanford, Kings County, California. According to the U.S. Geological Survey (USGS) Hanford quadrangle topographic map sheet (7.5-minute series), the Site is located in Section 3 Township 19 South, Range 21 East, Mount Diablo Principal Meridian (see Figure 1 in Appendix A and documents in Appendix B). The Site is known as Kings County Assessor's Parcel Numbers (APNs) 011-040-008, 011-040-010, and 011-040-027 and is also known as the Vesting Tentative Subdivision Map No. 943. Additional legal descriptions for the Site are included in the Environmental Lien and AUL Search as obtained from Environmental Data Resources, Inc. (EDR) included in Appendix B. A Property Tax Map Report as obtained from EDR is also included in Appendix B. However, no APN maps were supplied in the Property Tax Map Report. Additionally, no APN maps were available in numerous website searches with the City of Hanford and the County of Kings. The Vesting Tentative Subdivision Map is included in Appendix C.

### **2.2 SITE AND VICINITY GENERAL CHARACTERISTICS**

The Site is currently vacant land being utilized for agricultural operations.

The Site is in an area largely characterized by residential development, vacant land and/or agricultural land.

The Site is currently zoned as "R-1-5" (Single Family: 5,000 SF min.) on the Vesting Tentative Subdivision Map dated March 21, 2024.

### **2.3 CURRENT PROPERTY USE**

The Site is currently vacant land being utilized for agricultural operations.

## 2.4 SITE IMPROVEMENTS

The Site is currently vacant land being utilized for agricultural operations.

Photographs of the Site are included in Appendix D and locations of the photographs are shown on Figure 3 in Appendix A.

### 2.4.1 HAZARDOUS SUBSTANCES

Visual evidence of hazardous substances and wastes was not observed during the Site reconnaissance. No visual indication of spills or leaks were observed. No pungent or acrid odors were observed emanating from the Site.

### 2.4.2 STORAGE TANKS

GEO TEK did not observe evidence of underground or above-ground fuel storage tanks (such as vent pipes, fill pipes, regular-shaped depressions, etc.) on the Site.

### 2.4.3 POLY-CHLORINATED BIPHENYLS (PCBs)

GEO TEK did not observe suspect equipment (transformers, elevators, hydraulic lift mechanisms, trash compactors, etc.) which may contain PCBs on the Site.

### 2.4.4 CONTROLLED SUBSTANCES

GEO TEK consulted the U.S. Drug Enforcement Agency (DEA) website ([Clandestine Drug Labs in the United States | DEA.gov](https://www.dea.gov)) to cross-check the Site address and adjoining properties against published facilities subject to DEA enforcement. The Site nor any adjoining facilities appeared on the list of published facilities for the last five (5) years.

GEO TEK consulted with the Hanford City Fire and Police Departments regarding controlled substances in association with the Site or adjoining facilities. Neither agency had information regarding the Site.

GEO TEK did not observe evidence of illegal or controlled substances being used or manufactured at the Site.

#### 2.4.5 INDICATIONS OF SOLID WASTE DISPOSAL

Waste disposal for the Site and Site area is provided by the City of Hanford. Scattered household items and landscaping debris were observed during the Site reconnaissance. These materials are considered a *de minimis* condition and should be removed and disposed of at a proper facility prior to any future land development.

#### 2.4.6 UTILITY SUPPLY

Sewer and water services for the Site and area are provided by the City of Hanford. Electric services for the Site and area are provided by Southern California Edison. Gas services for the Site and area are provided by The Gas Company.

#### 2.4.7 DRAINAGE

Natural drainage at the Site is generally interpreted to be toward the north, conforming to the natural topography in the area. Ponded water was not observed during the Site reconnaissance.

#### 2.4.8 OTHER CONDITIONS OF CONCERN

No visual indication of conditions of concern (drywells, cesspools, etc.) that would indicate a recognized environmental condition was observed during the Site reconnaissance.

#### 2.4.9 INTERVIEWS

GEOtek interviewed the following individuals while performing this assessment:

- Mr. Isaac Vazquez, a representative of the future Site owner, completed a User Questionnaire, dated June 6, 2024.
- Mr. Marc R. Frelier, a representative of the current Site owner, completed a Property Owner Questionnaire, dated May 27, 2024.

Information from these interviews is incorporated into the appropriate sections of this report.

#### 2.5 CURRENT ADJOINING PROPERTY USE

The Site is in an area largely characterized by residential development, vacant land or agricultural land. The Site is bound to the north by Hanford Armona Road, followed by

residences (12358-12458 Hanford Armona Road) and agricultural land. The Site is bound to the east by residential development (1983 and 1984 West Idlewood Way; 1986 West Concord Way; 1100-1198, 1224-1380, 1400-1490 Greenbrier Drive; and 1978 West Summer Blossom Way). Agricultural land bounds the Site to the south. Agricultural land and residences (12645 and 12633 Hanford Armona Road) bound the Site to the west. None of the adjoining properties appear to represent a recognized environmental condition or environmental concern to the Site.



### **3.0 CLIENT PROVIDED INFORMATION**

As a form of interview, Mr. Isaac Vazquez, a representative of the future Site owner, completed a “User Questionnaire” for the Site, in accordance with ASTM E 1527-21. A copy of the completed questionnaire is included in Appendix C.

#### **3.1 ENVIRONMENTAL CLEAN UP LIENS**

Mr. Isaac Vazquez is not aware of any environmental clean-up liens at the Site.

#### **3.2 ACTIVITY AND USE LIMITATIONS**

Mr. Isaac Vazquez is not aware of any activity use limitations at the Site.

#### **3.3 SPECIALIZED KNOWLEDGE**

Mr. Isaac Vazquez is not aware of any specialized knowledge of the Site or nearby properties.

#### **3.4 PURCHASE PRICE**

Mr. Isaac Vazquez states that the purchase price being paid for the property reflects the fair market value.

#### **3.5 COMMONLY KNOWN INFORMATION**

Mr. Isaac Vazquez states that he is not aware of commonly known or reasonably ascertainable information for the Site.

#### **3.6 OBVIOUS INDICATORS OF CONTAMINATION**

Mr. Isaac Vazquez states that he is not aware of obvious indicators of a likely environmental impact at the Site.

#### **4.0 OWNER, PROPERTY MANAGER AND OCCUPANT INFORMATION**

This section contains other relevant information regarding this assessment in accordance with ASTM I527-21.

##### **4.1 OWNER, PROPERTY MANAGER AND OCCUPANT INFORMATION**

It is GEOTEK's understanding that Middlefield Manor LLC currently owns and manages the Site. The Site is currently unoccupied.

##### **4.2 INTERVIEWS**

GEOTEK interviewed the following individuals while performing this assessment:

- Mr. Isaac Vazquez, a representative of the future Site owner, completed a User Questionnaire, dated June 6, 2024.
- Mr. Marc R. Frelier, a representative of the current Site owner, completed a Property Owner Questionnaire, dated May 27, 2024.

Information from these interviews is incorporated into the appropriate sections of this report.

As a form of interview, Mr. Marc R. Frelier, a representative of the current Site owner, completed a "Property Owner Questionnaire" for the Site in accordance with ASTM E 1527-21. A copy of the completed questionnaire is included in Appendix C.

Mr. Marc R. Frelier answered "yes" to questions 10b, 11a, and 11b.

In question 10a Mr. Frelier states, "small diesel tanks servicing ag well". GEOTEK did not observe these diesel tanks during the Site reconnaissance.

In question 10b, Mr. Frelier states, "for ag irrigation".

In question 11b Mr. Frelier states, "irrigation pipeline".

Mr. Marc R. Frelier answered "no", "unknown" or "not applicable" to the remaining questions.

In question 4a, Mr. Frelier clarifies, "fields have been laser leveled in past and benched".

In question 5b, Mr. Frelier clarifies, "only chemicals or material for farming".

In question 8a, Mr. Frelie clarifies, “only temporary ditches and drains for farming”.

In question 18a, Mr. Frelie clarifies, “may have been historical drainage at south end”.

Mr. Marc R. Frelie answered “no”, “unknown” or “not applicable” to the remaining questions.

GEOTEK’S Site reconnaissance and research did not discover substantially contradictory information from the Property Owner Questionnaire that would change the recommendations and conclusions of this report.

#### 4.3 REASON FOR PERFORMING PHASE I AND LIMITED PHASE II ESA

This Phase I and Limited Phase II ESA was performed at the request of K. HOVNANIAN CALIFORNIA REGION, INC. in order to qualify for one of the Landowner Liability Protections offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001.

#### 4.4 OTHER USER PROVIDED INFORMATION

GEOTEK was not provided with any other information of an environmental nature by K. HOVNANIAN CALIFORNIA REGION, INC. for the Site.

## **5.0 PROPERTY PHYSICAL SETTING**

Surface and subsurface environments are of interest because they control the movement of water-borne contaminants, which could be transported to and from the subject Site. GEOTEK reviewed information regarding the physical setting of the subject Site and immediate surrounding area.

### **5.1 REGIONAL GEOLOGY**

The property is situated in the Great Valley geomorphic province. The Great Valley province is one of the largest geomorphic units in western North America. It extends approximately 440 miles from the Sacramento Valley drained by the Sacramento River to the San Joaquin Valley drained by the San Joaquin River to the southeasterly adjacent Sierra Nevada province. This province varies in width from about 30 to 80 miles. The Great Valley is a trough in which sediments have been deposited since the Jurassic (about 160 million years ago). Great oil fields have been found in southernmost San Joaquin Valley and along anticlinal uplifts on its southwestern margin. In the Sacramento Valley, the Sutter Buttes, the remnants of an isolated Pliocene volcano rise above the valley floor. It is bounded on the west, northwest and southwest by the Coast Ranges province and on the east, northeast and southeast by the Sierra Nevada province.

The San Joaquin Fault borders the northwestern portion of the Great Central Valley province, adjacent to the Coast Ranges province, while the White Wolf Fault borders the southeastern portion adjacent to the Sierra Nevada province.

### **5.2 LOCAL GEOLOGIC SETTING**

The Site and Site area are understood to be underlain by alluvial fan deposits (Matthews, R.A., and Burnett, J.L., 1965). Additional data regarding soil survey information for the Site and Site area is also included in Appendix B.

### **5.3 TOPOGRAPHY**

The Site and Site area can be considered as having relatively flat terrain. Based on the USGS topographic map for the area and other documents reviewed for this report, the elevation of the Site is approximately 225 feet above mean sea level.

#### 5.4 VICINITY SURFACE DRAINAGE

Natural drainage at the Site is interpreted to be dominantly directed toward the north, conforming to the natural topography in the area.

According to the Federal Emergency Management Agency (FEMA), the Site is in an area of “0.2 percent annual chance flood hazard” (Community Panel Number 06031C-0185C and 06031C-0195C, both dated June 16, 2009). A copy of the FEMA map is included in Appendix C.

#### 5.5 HYDROGEOLOGY

According to a review of historical groundwater data (California Department of Water Resources and California State Water Resources Control Board groundwater well data [<http://wdl.water.ca.gov> and <http://geotracker.waterboards.ca.gov>]) and in-house information, groundwater is greater than 50 feet below ground surface with a flow estimated to be directed to the north.

## 6.0 ENVIRONMENTAL REGULATORY RECORDS REVIEW

The records review is conducted to help identify known recognized environmental conditions at the Site and/or on adjoining or nearby properties which may have impacted the subject Site.

### 6.1 ENVIRONMENTAL DATABASE RECORDS SEARCH

GEOTEK obtained and reviewed an environmental database report of the federal and state environmental records specified by ASTM E 1527-21. The database report was provided by Environmental Data Resources, Inc. (EDR) of Shelton, Connecticut. Additionally, orphan or un-mappable sites listed by EDR were reviewed for the approximate minimum search distances noted and included in the discussion, if applicable. Refer to Appendix E for a copy of the database report.

| ENVIRONMENTAL DATABASE                                                                                                                   | MINIMUM SEARCH DISTANCE | SITE | ADJOINING | TOTAL LISTED |
|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------|-----------|--------------|
| U.S. Department of Defense (DOD) facilities and Formerly Used Defense Sites (FUDS)                                                       | 1.0 Mile                | No   | 0         | 0            |
| Environmental Protection Agency (EPA) - National Priorities List (NPL), including delisted NPL                                           | 1.0 Mile                | No   | 0         | 0            |
| EPA – Superfund Enterprise Management System (SEMS), including archived sites (formerly CERCLIS)                                         | 0.5 Mile                | No   | 0         | 0            |
| EPA – Resource Conservation and Recovery Act (RCRA), Corrective Action Facilities (CORRACTS)                                             | 1.0 Mile                | No   | 0         | 0            |
| EPA – RCRA, Transportation, Storage, and Disposal facilities (TSD)                                                                       | 0.5 Mile                | No   | 0         | 0            |
| EPA - RCRA Generators                                                                                                                    | Site and Adjoining      | No   | 0         | 0            |
| EPA – Emergency Response Notification System (ERNS)                                                                                      | Site                    | No   | N/A       | 0            |
| Federal institutional control/engineering control registries                                                                             | Site                    | No   | N/A       | 0            |
| California Environmental Protection Agency (CEPA) – State Response Sites (Response, formerly Annual Work Plan and Bond Expenditure Plan) | 1.0 Mile                | No   | 0         | 0            |

| ENVIRONMENTAL DATABASE                                                                                                                                                                                                   | MINIMUM SEARCH DISTANCE | SITE | ADJOINING | TOTAL LISTED |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------|-----------|--------------|
| CEPA – EnviroStor Database (ENVIROSTOR, formerly CALSITES)                                                                                                                                                               | 0.5 Mile                | No   | 0         | 1            |
| CEPA – California Hazardous Materials Information Reporting System (CHMIRS)                                                                                                                                              | Site and Adjoining      | No   | 0         | 0            |
| CEPA – Cleanup Program Sites (CPS, formerly SLIC) <sup>i</sup>                                                                                                                                                           | 0.5 Mile                | No   | 0         | 0            |
| Department of Resources, Recycling, and Recovery (DRRR) and CEPA - Solid Waste Fill/Landfill (SWF/LF), Solid Waste Assessment Test (SWAT)/Waste Management Unit Database System (WMUDS) and Recycling Facilities (SWRCY) | 0.5 Mile                | No   | 0         | 0            |
| CEPA – Leaking Underground Storage Tanks (LUST), including historic and archive databases                                                                                                                                | 0.5 Mile                | No   | 0         | 1            |
| CEPA – Underground Storage Tanks (UST), including historic and archive databases                                                                                                                                         | Site and Adjoining      | No   | 0         | 0            |
| State institutional control/engineering control registries                                                                                                                                                               | Site                    | No   | N/A       | 0            |
| Federal and/or state Voluntary Cleanup Program (VCP) sites                                                                                                                                                               | 0.5 Mile                | No   | 0         | 0            |
| Federal and/or state Brownfield Sites (BFS)                                                                                                                                                                              | 0.5 Mile                | No   | 0         | 0            |
| Local and/or Tribal databases                                                                                                                                                                                            | Up To 1.0 Mile          | No   | 0         | 0            |
| Drycleaners                                                                                                                                                                                                              | 0.25 Mile               | No   | 0         | 0            |
| Other databases                                                                                                                                                                                                          | Up to 1.0 Mile          | No   | 0         | 0            |
| Unmappable facilities                                                                                                                                                                                                    | Up to 1.0 Mile          | No   | 0         | 1            |

N/A – Not Applicable

<sup>i</sup> Spills, Leaks, Investigations, and Cleanups (SLIC) facilities.

## 6.2 DISCUSSION OF REGULATORY RECORDS

### 6.2.1 DEPARTMENT OF DEFENSE

The Department of Defense (DOD) facility database includes federal facilities operated by the DOD which encompasses greater than 640 acres. Formerly Used Defense Sites (FUDS) are properties where the U.S. Army Corps of Engineers is actively working or will take necessary cleanup actions. Environmental impacts from the operations of such facilities have been

documented across the continental United States. The DOD and FUDS databases are searched for a 1.0-mile distance.

The Site does not appear on the DOD or FUDS databases. There are no facilities listed on the DOD or FUDS databases within 1.0-mile of the Site.

#### 6.2.2 NATIONAL PRIORITIES LIST

The National Priorities List (NPL) is the EPA's list of confirmed or proposed Superfund sites. GEOTEK's review of this data includes sites which have been delisted from the NPL. The NPL is searched for a 1.0-mile distance.

The Site does not appear on the NPL. There are no NPL facilities located within 1.0-mile of the Site.

#### 6.2.3 SUPERFUND ENTERPRISE MANAGEMENT SYSTEM

The Superfund Enterprise Management System (SEMS, formerly CERCLIS) is a compilation of sites that the EPA has investigated or is currently investigating for a release or threatened release of hazardous substances. GEOTEK's review of SEMS sites includes archive (no further remedial action planned) facilities. The SEMS list is searched for a 0.5-mile distance.

The Site does not appear on the SEMS list. There are no SEMS facilities located within 0.5-mile of the Site.

The Site does not appear on the SEMS-ARCHIVE list. There are no facilities on the SEMS-ARCHIVE list within 0.5-mile of the Site.

#### 6.2.4 RESOURCE CONSERVATION AND RECOVERY ACT

The Resource Conservation and Recovery Act (RCRA) compile selective information on facilities which generate, transport, store, treat and or dispose of hazardous waste. RCRA facilities can be listed on one of three databases:

- *Corrective Action Facilities (CORRACTS)* are facilities undergoing corrective action. A corrective action order is issued pursuant to RCRA Section 3008(h) when there has been a release of hazardous waste or constituents into the environment from a RCRA facility. The CORRACTS list is searched for a 1.0-mile distance.



The Site does not appear on the CORRACTS list. There are no CORRACTS facilities located within 1.0-mile of the site.

- *Transportation, Storage, and Disposal Facilities (TSD)* includes facilities that transport, store or dispose of hazardous waste and are not listed on the RCRA Generators list. The TSD is searched for a 0.5-mile distance.

The Site does not appear on the RCRA TSD list. There are no RCRA TSD facilities located within 0.5-mile of the site.

- *Generators List* identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Generators database is a compilation by the EPA of reporting facilities that generate hazardous waste. The RCRA generators list is searched for the Site and adjoining properties.

The Site does not appear on the RCRA Generators list. There are no facilities listed on the RCRA Generators list that adjoin the Site.

#### 6.2.5 FEDERAL INSTITUTIONAL CONTROL/ENGINEERING CONTROL REGISTRIES

The EPA maintains three (3) databases which list sites that have institutional and/or engineering controls in place as part of their operations. These databases are searched for the Site.

The Site does not appear on these databases.

#### 6.2.6 EMERGENCY RESPONSE NOTIFICATION SYSTEM

The Emergency Response Notification System (ERNS) is a national database used to collect information on reported releases of oil or hazardous substances. The ERNS list is searched for the Site.

The Site does not appear on the ERNS list.

#### 6.2.7 STATE RESPONSE SITES

The State Response Sites (RESPONSE) records are the state equivalent to the federal National Priorities List (NPL) database. The RESPONSE database is searched for a 1.0-mile distance.

The Site does not appear on the RESPONSE database. There are no RESPONSE facilities located within 1.0-mile of the site.

#### 6.2.8 ENVIROSTOR DATABASE

The EnviroStor Database (EnviroStor, formerly CALSITES) records are the state equivalent to the federal SEMS database. EnviroStor is searched for a 0.5-mile distance.

The Site does not appear on the EnviroStor database.

There is one (1) EnviroStor facility located within 0.5-mile of the Site. The facility is listed as Ben Cornelius and is addressed as 11801 12<sup>th</sup> Avenue. The facility is located approximately 2,362 feet (0.447 mile) southeast of the Site. The site type is listed as “historical” and the facility status is listed as “refer:RWQCB” and dated June 26, 1995. Comments explain it was discovered on March 23, 1987 and that waste was being stored in an unlined pond. Due to the facility status, distance, and being located hydrogeologically down-gradient, it is GEOTEK’s opinion that this facility has not not created a recognized environmental condition to the Site.

#### 6.2.9 CALIFORNIA HAZARDOUS MATERIAL INCIDENT REPORT SYSTEM

The California Hazardous Material Incident Report Systems (CHMIRS) is a state database used to collect information on reported hazardous materials incidents (accidental leaks and spills). The CHMIRS list is searched for a 0.25-mile distance.

The Site does not appear on the CHMIRS database. There are no CHMIRS facilities located within 0.25-mile of the Site.

#### 6.2.10 CLEANUP PROGRAM SITES

The California Cleanup Program Sites (CPS) database (formerly the SLIC database) is compiled by the CEPA State Water Resources Control Board through its Regional Water Quality Control Boards (RWQCB). It is designed to protect and restore water quality from spills, leaks, and similar discharges. The CPS is searched for a 0.5-mile distance.

The Site does not appear on the CPS database. There are no CPS facilities located within 0.5-mile of the Site.

#### 6.2.11 SOLID WASTE FACILITIES LIST

Department of Resources, Recycling, and Recovery (DRRR) and CEPA maintain multiple databases identifying and tracking landfill facilities. The Solid Waste Fill/Landfill (SWF/LF), Waste Management Unit Database System (WMUDS)/Solid Waste Assessment Test (SWAT), and Solid Waste Recycling Facilities (SWRCY) databases includes information pertaining to closed and open solid waste facilities operating in the state of California (collectively the "SWLF"). The SWLF databases are searched for a 0.5-mile distance.

The Site does not appear on the WMUDS/SWAT, SWF/LF or SWRCY lists. There are no facilities on the WMUDS/SWAT, SWF/LF or SWRCY lists within 0.5-mile of the Site.

#### 6.2.12 LEAKING UNDERGROUND STORAGE TANKS LIST

The California Leaking Underground Storage Tanks (LUST) list is a compilation of petroleum storage tank sites that have reported a release. GEOTEK's review includes historic, archived and tribal LUST databases. The LUST list is searched for a 0.5-mile distance.

The Site does not appear on the LUST list.

There is one (1) facility identified on the LUST databases withing 0.5-mile of the Site. The facility is listed as Highway Patrol Headquarters and is addressed as 11050 13<sup>th</sup> Avenue. The facility is located 2,462 feet (0.466 mile) west-northwest of the Site. The status is listed as "completed-case closed" as of May 19, 2016. Due to the facility status, distances, and/or location hydro-geologically down-gradient, it is GEOTEK's opinion that this facility has not created a recognized environmental condition to the Site.

#### 6.2.13 UNDERGROUND STORAGE TANKS LIST

The California Underground Storage Tank (UST) list is a compilation of petroleum storage tank sites that are registered with the state of California. GEOTEK's review included historic, archived, and tribal UST databases. The UST list is searched for the Site and adjoining properties.

The Site does not appear on the UST list. There are no facilities adjoining to the Site on the UST list.

The Site does not appear on the HIST UST list. There are no facilities adjoining to the Site on the HIST UST list.

#### 6.2.14 STATE INSTITUTIONAL CONTROL/ENGINEERING CONTROL REGISTRIES

The State of California maintains institutional and engineering control databases or registries. This lists sites with engineering or institutional controls in place. Institutional controls include administrative measures intended to prevent exposure to contaminants remaining on site. Engineering controls include various forms of caps, building foundations, liners, and treatment methods. The State Institutional Control/Engineering Control Registries is searched for the Site.

The Site does not appear on the State Institutional Control/Engineering Control Registries.

#### 6.2.15 FEDERAL AND/OR STATE VOLUNTARY CLEANUP PROGRAM

Voluntary Cleanup Program (VCP) facilities are those where the current or past owner of which has entered into an agreement with EPA or the state to utilize their own resources to remediate a site or facility. The VCP databases are searched for 0.5-mile.

The Site does not appear on the VCP databases. No facilities were identified on the VCP databases withing 0.5-mile of the Site.

#### 6.2.16 BROWNFIELDS SITES

Brownfields sites (BFSs) are real property, the expansion, redevelopment or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant or contaminant. Federal brownfields are listed by EPA. State brownfields in California are listed by CEPA. BFSs are searched for 0.5-mile.

The Site does not appear on the federal or stated BFS database. There are no BFS facilities within 0.5-mile of the Site.

#### 6.2.17 LOCAL AND/OR TRIBAL DATABASES

The Site does not appear on the local databases reviewed.

Tribal governments are under the jurisdiction of the EPA for environmental concerns. Currently, the EPA Region 9 publishes LUST and UST information for tribes in Arizona, California, Hawaii, Nevada, and the Pacific Territories. The LUST database is searched for 0.5 mile, and the UST database is searched for 0.25 mile.

The Site does not appear on the Tribal LUST or UST databases. No facilities were identified on the Tribal LUST or UST databases within 0.5 mile of the Site.

#### 6.2.18 DRYCLEANERS

The DRYCLEANERS list is compiled and provided by CEPA. The DRYCLEANER database is searched for a 0.25-mile distance.

The Site does not appear on the DRYCLEANER list. There are no DRYCLEANER facilities listed within 0.25-mile of the Site.

#### 6.2.19 OTHER DATABASES

EDR compiles information from multiple federal, state, local, and proprietary databases. Most are secondary or tertiary or redundant. Facilities compiled on these other databases are evaluated based on the severity of the listing, distance, and location.

The Site does not appear on the environmental database report obtained for this assessment.

There are no other facilities listed in the environmental database report.

##### 6.2.19.1 HISTORIC AUTOMOTIVE FACILITIES

EDR provides a proprietary database including the names, locations, and dates of known historic automotive repair and service facilities. This database is searched for 0.25-mile.

The Site does not appear on the historic automotive facilities database. There are no listed facilities within 0.25-mile.

##### 6.2.19.2 HISTORICAL DRYCLEANERS

EDR provides a proprietary database including the names, locations, and dates active of known dry-cleaning facilities. The state and certain local regulatory agencies also provide information on dry-cleaning facilities. These databases are searched for 0.25-mile.

The Site does not appear on the Historical Drycleaners database. There are no listed facilities within 0.25-mile.

#### 6.2.19.3 MANUFACTURED GAS PLANTS

EDR provides a proprietary database including the names, locations, and dates active of known manufactured gas plants (MGP). This database is searched for 1.0-mile.

The Site does not appear on the MGP database. There are no listed facilities within 0.25-mile.

#### 6.2.20 UNMAPPABLE FACILITIES

GEO TEK reviewed the listing of “orphan” or unmappable facilities in the database report. There is one (1) unmapped listing in the database report. However, this listing is approximately five (5) miles from the Site and therefore is not considered a recognized environmental condition to the Site.

### 6.3 LOCAL REGULATORY AGENCY RECORDS

GEO TEK reviewed the CEPA (State Water Resources Control Board) “GeoTracker” database ([GeoTracker \(ca.gov\)](https://www.waterboards.ca.gov/geotracker/)) and the CEPA (Department of Toxic Substances Control) “EnviroStor” database ([EnviroStor \(ca.gov\)](https://www.epa.gov/envirostor/)) for information on the Site.

The Site does not appear on the “GeoTracker” or “EnviroStor” databases.

GEO TEK consulted with the City of Hanford Police and Fire Departments regarding aboveground and underground storage tanks, emergency responses, hazardous material permits, spills, leaks, inspections, controlled substances, or other information of an environmental or hazardous nature in association with the Site or adjoining facilities. Neither agency had information regarding the Site.

### 6.4 OUT OF SCOPE CONSIDERATIONS

Per- and Poly-Fluoroalkyl substances (PFAS) are a group of over 9,000 synthetic chemicals that have been used for over 70 years. Due to the very stable carbon-fluorine bonds, perfluoroalkyls are resistant to biodegradation, photooxidation, direct photolysis, and hydrolysis. Atmospheric deposition can lead to contamination of soils and leaching into groundwater away from point sources. Health effects in humans may include cancer, cardiovascular, immunological, endocrine, reproductive, and hepatic harm.

At the time of the adoption of ASTM 1527-21 standard, PFAS chemicals were considered to be “emerging contaminants” and therefore technically are considered to be non-scope considerations, per the ASTM-1527-21 standards. However, as of April 19, 2024, the United States Environmental Protection Agency (USEPA) officially designated the regulatory status of two (2) commonly utilized PFAS chemicals as hazardous substances under CERCLA. The two (2) chemicals are perfluoro octane sulfonic acid (PFOS) and perfluorooctanoic acid (PFOA). Furthermore, it is likely that numerous additional chemicals within the PFAS family will become officially designated as hazardous substances in the near future.

Although still technically considered an emerging contaminant per the governing ASTM 1527-21 standards, GEOTEK conservatively has elected to currently consider PFAS chemicals to be hazardous substances and thus potentially may represent a recognized environmental condition. Generally, high-risk PFAS sites include airports, landfills, wastewater-treatment plants, government and military sites, petroleum plants, fire suppression/firefighting sites with aqueous film forming foam (AFFF), PFAS treated material and food packaging facilities, plating facilities, some biosolid farming sites, and most chemical production and manufacturing facilities, among others.

The Site does not appear on the PFAS database within the EDR Radius Report. The Site does not appear on the GeoTracker PFAS Map website ([GeoTracker PFAS Map \(ca.gov\)](https://www.geotracker.com/pfas-map)). The Site does not appear on the USEPA PFAS Analytic Tools website ([PFAS Analytic Tools \(epa.gov\)](https://www.epa.gov/pfas-analytic-tools)).

Based on the lack of high-risk facilities and no obvious signs of substantial PFAS contamination at the Site, it is GEOTEK’s opinion that PFAS chemicals do not represent a recognized environmental condition to the Site.

## **7.0 VAPOR ENCROACHMENT SCREENING**

The purpose of a Vapor Encroachment Screen (VES) is to identify, to the extent feasible, if a Vapor Encroachment Condition (VEC) exists at the Site.

A Vapor Encroachment Screen Report was generated for the Site and Site area utilizing EDR's Vapor Encroachment Worksheet (see Appendix F).

It was determined that there are no historical dry cleaners, former manufactured gas plants, former industrial sites or historical gas stations located within 600 feet and/or up gradient from the Site. It was also determined that no other conditions that would indicate a VEC exists at the Site.

It is GEOTEK's opinion that a VEC is not likely to exist at the subject Site. The Vapor Encroachment Screen report is included in Appendix F.



## **8.0 SITE AND SURROUNDING AREA HISTORY**

In order to construct the history of the Site and the surrounding area, GEOTEK reviewed reasonably ascertainable public documents, including aerial photographs, topographic maps, building records, city directories, fire insurance maps, environmental liens and activity use limitations (AULs) and county assessor history records.

### **8.1 HISTORICAL SITE USAGE**

#### **8.1.1 AERIAL PHOTOGRAPH REVIEW**

GEOTEK reviewed aerial photographs dated 1934, 1937, 1950, 1974, 1976, 1984, 1994, 2006, 2009, 2012, 2016, 2020 and 2024 (see Appendix A and B).

The Site appears to have been primarily utilized for agricultural purposes with a structure in the northwest portion of the Site in an aerial photograph dated 1934.

The structure appears to be razed in a 1937 aerial photograph.

The Site appears to be entirely utilized for agricultural operations from at least 1950 to the present.

A 2024 aerial photograph is utilized for Figure 2 (Appendix A).

#### **8.1.2 ASSESSOR'S INFORMATION**

The Site is known as Kings County Assessor's Parcel Numbers (APNs) 011-040-008, 011-040-010, and 011-040-027 and is also known as the Vesting Tentative Subdivision Map No. 943. Additional legal descriptions for the Site are included in the Environmental Lien and AUL Search as obtained from Environmental Data Resources, Inc. (EDR) included in Appendix B. A Property Tax Map Report as obtained from EDR is also included in Appendix B. However, no APN maps were supplied in the Property Tax Map Report. Additionally, no APN maps were available in numerous website searches with the City of Hanford and the County of Kings. The Vesting Tentative Subdivision Map is included in Appendix C.

#### **8.1.3 BUILDING DEPARTMENT RECORDS**

A Building Permit Report, as obtained from and provided by EDR, is included in Appendix B. No permits were provided for the Site as an address was not provided/is not available.

#### 8.1.4 CHAIN OF TITLE

GEO TEK has not received nor been authorized to obtain Chain-of-Title documents for the Site.

#### 8.1.5 CITY DIRECTORY REVIEW

GEO TEK obtained The EDR – City Directory Image Report, as obtained from and provided by EDR, and included in Appendix B. No listings were provided for the Site as an address was not provided/is not available.

#### 8.1.6 INTERVIEWS

GEO TEK interviewed the following individuals while performing this assessment:

- Mr. Isaac Vazquez, a representative of the future Site owner, completed a User Questionnaire, dated June 6, 2024.
- Mr. Marc R. Frelier, a representative of the current Site owner, completed a Property Owner Questionnaire, dated May 27, 2024.

Information from these interviews is incorporated into the appropriate sections of this report.

As a form of interview, Mr. Marc R. Frelier, a representative of the current Site owner, completed a “Property Owner Questionnaire” for the Site in accordance with ASTM E 1527-21. A copy of the completed questionnaire is included in Appendix C.

Mr. Marc R. Frelier answered “yes” to questions 10b, 11a, and 11b.

In question 10a Mr. Frelier states, “small diesel tanks servicing ag well”. GEO TEK did not observe these diesel tanks during the Site reconnaissance.

In question 10b, Mr. Frelier states, “for ag irrigation”.

In question 11b Mr. Frelier states, “irrigation pipeline”.

In question 4a, Mr. Frelier clarifies, “fields have been laser leveled in past and benched”.

In question 5b, Mr. Frelier clarifies, “only chemicals or material for farming”.

In question 8a, Mr. Frelier clarifies, “only temporary ditches and drains for farming”.

In question 18a, Mr. Frelier clarifies, “may have been historical drainage at south end”.

Mr. Marc R. Frelier answered “no”, “unknown” or “not applicable” to the remaining questions.

GEO TEK’S Site reconnaissance and research did not discover contradictory information from the Property Owner Questionnaire.

#### 8.1.7 RECORDER’S INFORMATION

According to information provided by the EDR Environmental Lien and AUL Search, the Site is currently owned by Middlefield Manor LLC. No record of environmental liens nor activity and use limitations (AULs) was revealed in the documents reviewed. A copy of this report is included in Appendix B.

#### 8.1.8 SANBORN MAP REVIEW

Sanborn Fire Insurance Maps for the Site were requested from EDR-Sanborn, which owns and maintains the largest and most complete collection of maps. No source sheets were provided in the Sanborn Map Report as the Site is an “unmapped property”. The Sanborn Map Report is included in Appendix B.

#### 8.1.9 TOPOGRAPHIC MAP REVIEW

GEO TEK reviewed the following topographic map sheets:

- Hanford Quadrangle (7.5-minute series), dated 1926
- Hanford Quadrangle (7.5-minute series), dated 1954
- Hanford Quadrangle (15-minute series), dated 1976
- Hanford Quadrangle (7.5-minute series), dated 2012
- Hanford Quadrangle (7.5-minute series), dated 2015
- Hanford Quadrangle (7.5-minute series), dated 2018
- Hanford Quadrangle (7.5-minute series), dated 2021

The Topo Map Report, as obtained from EDR, is included in Appendix B.

The Site appears to be vacant land on the topographic map sheets dated 1926 and 1954 topographic map sheets.

The 1976 topographic map sheet is an aerial photograph. The Site appears to be used for agricultural operations in this photograph.

Agricultural land is depicted in the southwest portion of the Site on the topographic map sheet dated 2012.

The 2015 2018 and 2021 topographic map sheets show little detail other than streets in the vicinity.

A 2021 topographic map sheet is utilized for Figure 1 (Appendix A).

## 8.2 HISTORICAL IMMEDIATELY SURROUNDING PROPERTY USAGE

### 8.2.1 AERIAL PHOTOGRAPH REVIEW

GEOTEK reviewed aerial photographs dated 1934, 1937, 1950, 1974, 1976, 1984, 1994, 2006, 2009, 2012, 2016, 2020 and 2024 (see Appendix A and B).

The surrounding areas appear to be generally utilized for agricultural operations and/or vacant land with scattered residences from at least 1934 until at least 1950.

Residential tract development is first visible to the east of the Site in an aerial photograph dated 1974.

Additional residences are visible to the east of the Site in an aerial photograph dated 1976.

There are no significant changes in the surrounding areas visible in the 1984 and 1994 aerial photographs.

A residential tract development and industrial/commercial building are visible to the north of the Site in an aerial photograph dated 2006.

Additional residences are visible to the east of the Site in aerial photographs dated 2009 and 2016, 2020 and 2024.

A 2024 aerial photograph is utilized for Figure 2 (Appendix A)

#### 8.2.2 CITY DIRECTORIES

GEOtek has reviewed a City Directory Image report obtained from and provided by EDR for the Site and surrounding property addresses. The City Directory Image report provides information on several nearby property addresses. The listings appear to primarily be residential in nature and are not considered a recognized environmental concern to the Site.

#### 8.2.3 SANBORN MAP REVIEW

Sanborn Fire Insurance Maps for the Site were requested from EDR-Sanborn, which owns and maintains the largest and most complete collection of maps. No source sheets were provided in the Sanborn Map Report as the Site and surrounding area are “unmapped property”. The Sanborn Map Report is included in Appendix B.

#### 8.2.4 TOPOGRAPHIC MAP REVIEW

GEOtek reviewed the following topographic map sheets:

- Hanford Quadrangle (7.5-minute series), dated 1926
- Hanford Quadrangle (7.5-minute series), dated 1954
- Hanford Quadrangle (15-minute series), dated 1976
- Hanford Quadrangle (7.5-minute series), dated 2012
- Hanford Quadrangle (7.5-minute series), dated 2015
- Hanford Quadrangle (7.5-minute series), dated 2018
- Hanford Quadrangle (7.5-minute series), dated 2021

The Topo Map Report, as obtained from EDR, is included in Appendix B.

The surrounding properties appear to be vacant land with sporadic structures on the topographic map sheet dated 1926. Additionally, the Southern Pacific Railroad is depicted to the north of the Site.

The surrounding properties appear to be vacant land and/or agricultural operations with sporadic residences on the topographic map sheet dated 1954. Additionally, there is a well depicted on the adjoining property to the west.

The 1976 topographic map sheet is an aerial photograph. The surrounding properties appear to primarily be used for agricultural operations with residential developments expanding to the east of the Site.

The 2012, 2015, 2018 and 2021 topographic map sheets show little detail other than streets in the vicinity.

A 2021 topographic map sheet is utilized for Figure I (Appendix A).

### 8.3 HISTORICAL USE SUMMARY

Based on readily available historical information, the Site appears to have been primarily utilized for agricultural purposes with a structure in the northwest portion of the Site in an aerial photograph dated 1934. The structure appears to be razed in a 1937 aerial photograph. The Site appears to be entirely utilized for agricultural operations from at least 1950 to the present.

The surrounding areas appear to be generally utilized for agricultural operations and/or vacant land with scattered residences from at least 1934 until at least 1950. Residential tract development is first visible to the east of the Site in an aerial photograph dated 1974. Additional residences are visible to the east of the Site in an aerial photograph dated 1976. There are no significant changes in the surrounding areas visible in the 1984 and 1994 aerial photographs. A residential tract development and religious building are visible to the north of the Site in an aerial photograph dated 2006. Additional residences are visible to the east of the Site in aerial photographs dated 2009 and 2016, 2020 and 2024.

Data gaps exist from 1926 to 1934, 1950 to 1974, 1976 to 1984, 1984 to 1994, and 1994 to 2006, due to the limited records which are reasonably ascertainable in the local area. However, it is GEOTEK's opinion that additional historical information, if it were to become available, is not likely to change the conclusions or recommendations of this assessment.

## 9.0 SUMMARY OF LIMITED SOIL ANALYSIS

As the Site was historically utilized for agriculture, GEOTEK obtained soil samples from the Site for chemical analysis. Twelve (12) soil samples were obtained from selected areas of the Site from a depth of up to approximately six (6) inches below the existing ground surface and submitted to a state certified laboratory for analysis of organo-chlorinated pesticides (OCPs) in accordance with US EPA Test Method 8081A and arsenic in accordance with US EPA Test Method 6010B. The locations of the samples are shown on Figure 4 in Appendix A.

Analysis of the soil samples had detectable concentrations of OCPs in five (5) of the samples (Samples #1, #4, #6, #7 and #8). The results are summarized in the following table:

**OCP SUMMARY ANALYTICAL RESULTS**

| Sample Name            | 4,4'-DDE<br>(ug/kg) |
|------------------------|---------------------|
| #1                     | 35                  |
| #2                     | <20                 |
| #3                     | <20                 |
| #4                     | 35                  |
| #5                     | <20                 |
| #6                     | 38                  |
| #7                     | 43                  |
| #8                     | 27                  |
| #9                     | <20                 |
| #10                    | <20                 |
| #11                    | <20                 |
| #12                    | <20                 |
| <b>Screening Level</b> | <b>2,000*</b>       |

ug/kg = micrograms per kilogram

\* = EPA Regional Screening Levels (RSLs) for residential soil (May 2024)

The concentration of the organo-chlorinated pesticide (OCP) compound 4,4'-DDE was not above screening levels for residential soils in the samples tested, as determined by EPA Regional Screening Level (RSL) for residential soil, May 2024 (TR=1E-06, HQ=1.0).

Analysis of the soil sample detected measurable quantities of arsenic in all 12 of the soil samples tested (Samples #1 through #12). The applicable results of the laboratory analysis are summarized in the following table:

### ARSENIC SUMMARY ANALYTICAL RESULTS

| Sample Name            | Arsenic (mg/kg) |
|------------------------|-----------------|
| #1                     | 9.9             |
| #2                     | 7.6             |
| #3                     | 7.2             |
| #4                     | 6.9             |
| #5                     | 6.9             |
| #6                     | 6.4             |
| #7                     | 7.1             |
| #8                     | 6.3             |
| #9                     | 6.1             |
| #10                    | 5.7             |
| #11                    | 6.4             |
| #12                    | 7.5             |
| <b>Screening Level</b> | <b>0.11*</b>    |

mg/kg = micrograms per kilogram

\* = DTSC Recommended Screening Levels (RSLs) for residential soil (May 2022)

The concentration of the metal arsenic in all of the soil samples was above screening levels for residential soils, as determined by the Department of Toxic Substance Control (DTSC). However, the EPA and the DTSC have acknowledged that naturally occurring arsenic in southern California typically exceeds the maximum screening level, with levels recorded up to 12 mg/kg in many areas ([Human Health Risk Assessment \(HHRA\) Note Number 11 - Southern California Ambient Arsenic Screening Level](#)). The test results for all of the soil samples are below the typically detected levels of arsenic in the southern California area.

A copy of the laboratory report and Chain-of-Custody documentation are included in Appendix G.

Based on the investigation, GEOTEK is of the opinion that possible previous pesticide usage has not created a recognized environmental condition or concern to the Site. Additional investigation is not considered necessary at the Site.



## **10.0 SIGNIFICANT DATA GAPS**

No significant data gaps were discovered while performing this Phase I and Limited Phase II Environmental Site Assessment. Therefore, it is GEOTEK's opinion that sufficient information was obtained to identify current Site conditions and past Site usage.

Minor data gaps include:

- Gaps in the historic records from 1926 to 1934, 1950 to 1974, 1976 to 1984, 1984 to 1994, and 1994 to 2006 due to the limited resources readily available and reasonably ascertainable in the local area or through online resources.
- GEOTEK has not received nor reviewed Chain-of-Title documents for the Site.

It is GEOTEK's opinion that additional information, if it were to become available, is not likely to change the conclusions or recommendations of this assessment.

## **11.0 CONCLUSIONS AND RECOMMENDATIONS**

GEO TEK has performed a Phase I and Limited Phase II Environmental Site Assessment (ESA) for the subject Site in substantial conformance with the scope and limitations of ASTM E 1527-21 and GEO TEK Proposal No. P-0401724-CR, dated April 4, 2024. Any exceptions to, or deletions from, this practice are described in the appropriate sections of this report.

Based on this investigation, this Phase I and Limited Phase II Environmental Site Assessment has not revealed evidence of a recognized environmental condition in connection with the subject Site. No further investigation is recommended at this time.

## 12.0 CERTIFICATIONS

I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in 40 CFR 312. I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject Site. I have developed and performed all the appropriate inquiries in conformance with the standards and practices set forth in 40 CFR 312.

The qualifications of the Project Team are included in Appendix H.

GEOTEK appreciates this opportunity to be of service. If you have any questions, or if GEOTEK can be of further service, please contact the office at (951) 710-1160.

Sincerely,  
**GEOTEK, INC.**



Kyle R. McHargue  
Project Geologist, CEG 2790  
Expires 02/28/2026

Anna M. Scott  
Project Geologist

\\geotekfs1\Riverside\Projects\3901 to 3950\3943CR K. Hovnanian California Region, Inc Cottonwood Phase 3 Hanford\Phase I ESA\3951-CR K Hovnanian Cottonwood Phase 3 - Phase I and Limited Phase II ESA.doc

## 13.0 REFERENCES

### CALIFORNIA, STATE OF

- EnviroStor, Records Inquiry, <https://www.envirostor.dtsc.ca.gov/public/>
- Geotracker, Records Inquiry, <https://geotracker.waterboards.ca.gov/>
- Matthews, R.A., and Burnett, J.L., 1965, "Geologic Map of California" Fresno Sheet, California Division of Mines and Geology, Geologic Atlas of California GAM-05, scale 1:250,000
- Water Resources, Department of Hydrologic Data

### ENVIRONMENTAL DATA RESOURCES, INC.

- Aerial Photo Decade Package, Inquiry No. 7674781.11, dated June 7, 2024
- Building Permit Report, Inquiry No. 7674781.8, dated June 6, 2024
- Certified Sanborn Map Report, Inquiry No. 7674781.3, dated June 6, 2024
- City Directory Abstract Report, Inquiry No. 7674781.5, dated June 7, 2024
- Environmental Lien and AUL Search Report, Inquiry No. 7674781.7, dated June 10, 2024
- Historical Topo Map Report, Inquiry No. 7674781.4, dated June 6, 2024
- Property Tax Map Report, Inquiry No. 7674781.6, dated June 6, 2024
- Radius Map Report, Inquiry No. 7674781.2s, dated June 6, 2024
- Vapor Encroachment Screen Report, Inquiry No. 7674781.2s, dated June 27, 2024

### FEDERAL EMERGENCY MANAGEMENT AGENCY

- Flood Insurance Map, Community Panel Number 06031C-0185C and 06031C-0195C, dated June 16, 2009, accessed on June 6, 2024

### HANFORD, CITY OF

- Fire Department, Records Inquiry
- Police Department, Records Inquiry

### KINGS, COUNTY OF

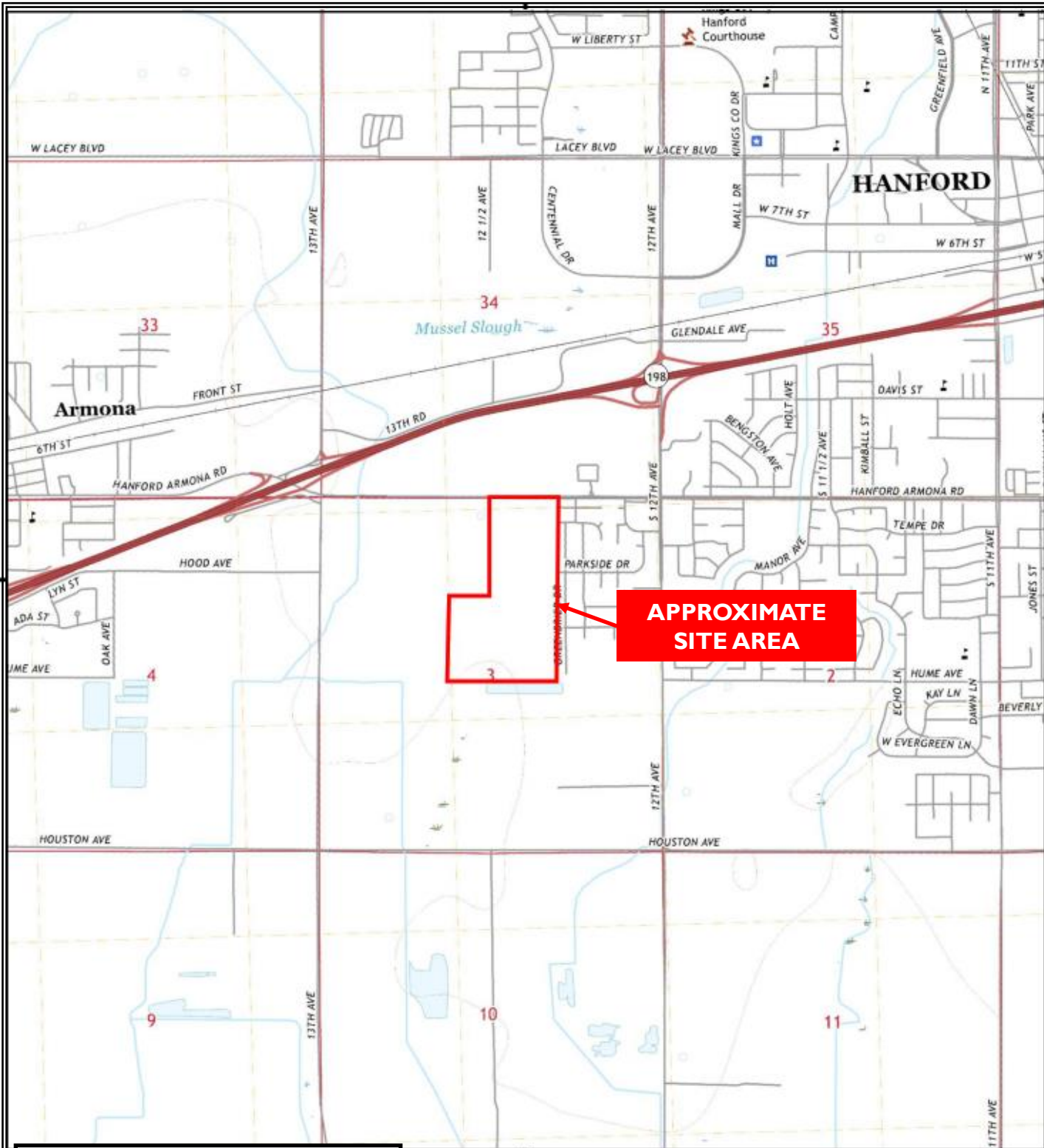
- Assessor's Office, Records Inquiry

### U.S. GOVERNMENT

- Drug Enforcement Agency
- Records inquiry, <http://www.dea.gov/seizures>

# **APPENDIX A**

## **FIGURES**



Modified from the Hanford 2021 7.5-Minute  
Topographic Map Sheets

0 Miles 0.25 0.5 1 1.5

**K. Hovnanian California Region, Inc.**  
Tentative Tract Map No. 943  
APN 184-100-008  
Hanford, King County, California

**Project No. 3951-CR**



**Figure I**  
**Site Location  
and  
Topography  
Map**





Single-Family Residences  
(12358-12458 Hanford Armona Road)

Agricultural Land

Vacant Land

Single-Family Development  
(1983 and 1984 West Idlewood Way)

Single-Family Development  
(1986 West Concord Way)

Single-Family Development  
(1100-1198 Greenbrier Drive)

Single-Family Development  
(1224-1380 Greenbrier Drive)

Single-Family Development  
(1978 West Summer Blossom Way)

Single-Family Development  
(1400-1490 Greenbrier Drive)

Single-Family Residence  
(12645 Hanford Armona Road)

Single-Family Residence  
(12633 Hanford Armona Road)

Site

Debris

Debris

Debris

Agricultural Land



**Legend**  
Site Boundary

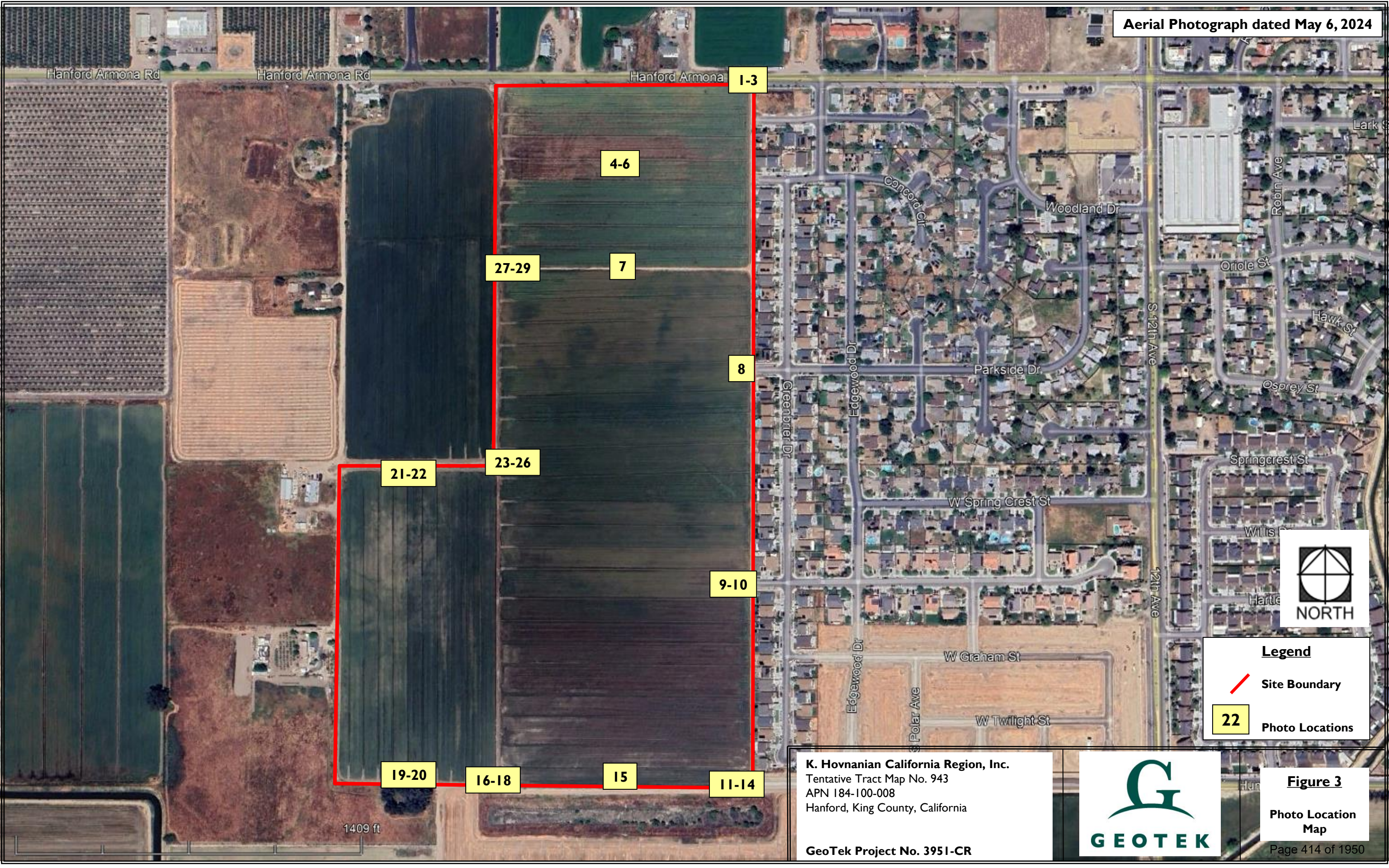
K. Hovnanian California Region, Inc.  
Tentative Tract Map No. 943  
APN 184-100-008  
Hanford, King County, California



**Figure 2**  
General  
Site Layout Map  
Page 413 of 1950

GeoTek Project No. 3951-CR





**Legend**

 Site Boundary

 Photo Locations

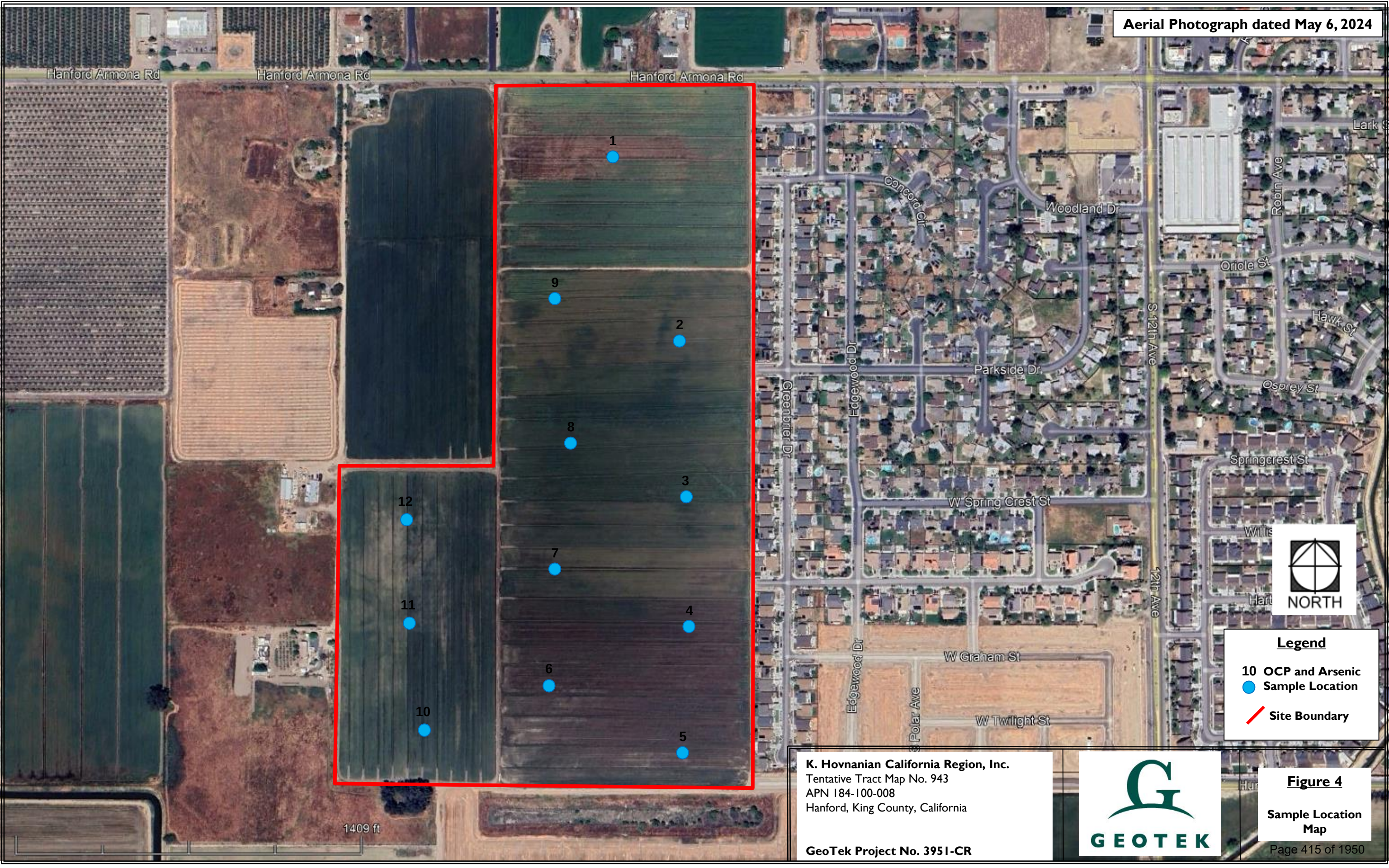
**K. Hovnanian California Region, Inc.**  
Tentative Tract Map No. 943  
APN 184-100-008  
Hanford, King County, California

**GeoTek Project No. 3951-CR**



**Figure 3**  
**Photo Location Map**  
Page 414 of 1950





**Legend**

10 OCP and Arsenic  
Sample Location

Site Boundary

**K. Hovnanian California Region, Inc.**  
Tentative Tract Map No. 943  
APN 184-100-008  
Hanford, King County, California

**GeoTek Project No. 3951-CR**



**Figure 4**  
**Sample Location Map**  
Page 415 of 1950



# **APPENDIX B**

## **DOCUMENTS OBTAINED FROM EDR**



**VTTM 943**

Hanford Armona Road

Hanford, CA 93230

Inquiry Number: 7674781.11

June 07, 2024

## The EDR Aerial Photo Decade Package



6 Armstrong Road, 4th floor  
Shelton, CT 06484  
Toll Free: 800.352.0050  
[www.edrnet.com](http://www.edrnet.com)

## EDR Aerial Photo Decade Package

06/07/24

**Site Name:**

VTTM 943  
Hanford Armona Road  
Hanford, CA 93230  
EDR Inquiry # 7674781.11

**Client Name:**

Geotek  
1548 North Maple Street  
Corona, CA 92880  
Contact: Kyle Richard Mchargue



Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

**Search Results:**

| <u>Year</u> | <u>Scale</u> | <u>Details</u>                     | <u>Source</u> |
|-------------|--------------|------------------------------------|---------------|
| 2020        | 1"=500'      | Flight Year: 2020                  | USDA/NAIP     |
| 2016        | 1"=500'      | Flight Year: 2016                  | USDA/NAIP     |
| 2012        | 1"=500'      | Flight Year: 2012                  | USDA/NAIP     |
| 2009        | 1"=500'      | Flight Year: 2009                  | USDA/NAIP     |
| 2006        | 1"=500'      | Flight Year: 2006                  | USDA/NAIP     |
| 1994        | 1"=500'      | Acquisition Date: January 01, 1994 | USGS/DOQQ     |
| 1984        | 1"=500'      | Flight Date: June 09, 1984         | USDA          |
| 1976        | 1"=500'      | Flight Date: July 01, 1976         | USGS          |
| 1974        | 1"=500'      | Flight Date: August 01, 1974       | USGS          |
| 1950        | 1"=500'      | Flight Date: January 25, 1950      | USDA          |
| 1937        | 1"=500'      | Flight Date: September 03, 1937    | USDA          |
| 1934        | 1"=500'      | Flight Date: January 01, 1934      | USGS          |

**When delivered electronically by EDR, the aerial photo images included with this report are for ONE TIME USE ONLY. Further reproduction of these aerial photo images is prohibited without permission from EDR. For more information contact your EDR Account Executive.**

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INQUIRY #: 7674781.11

YEAR: 2020

1" = 500'







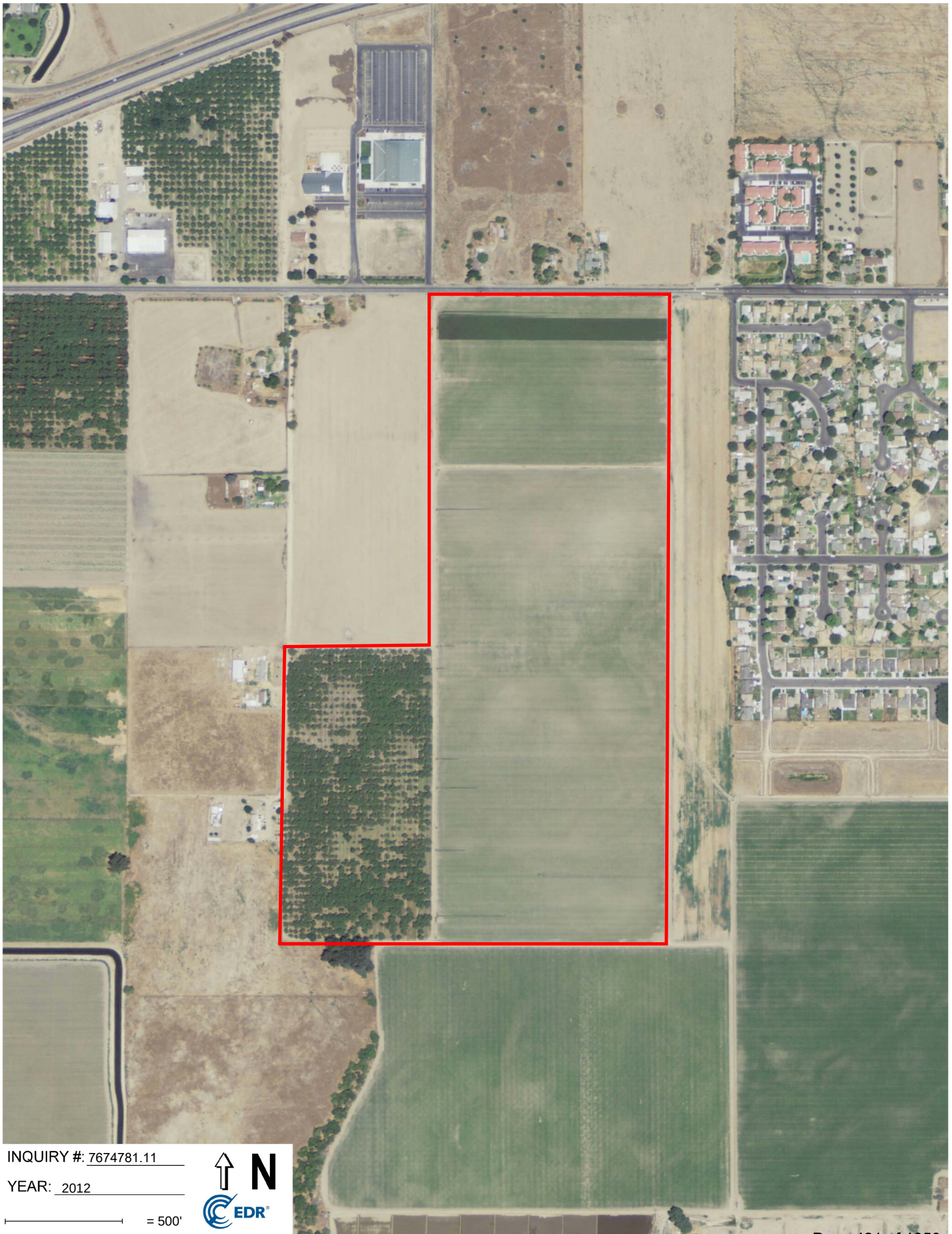
INQUIRY #: 7674781.11

YEAR: 2016

— = 500'







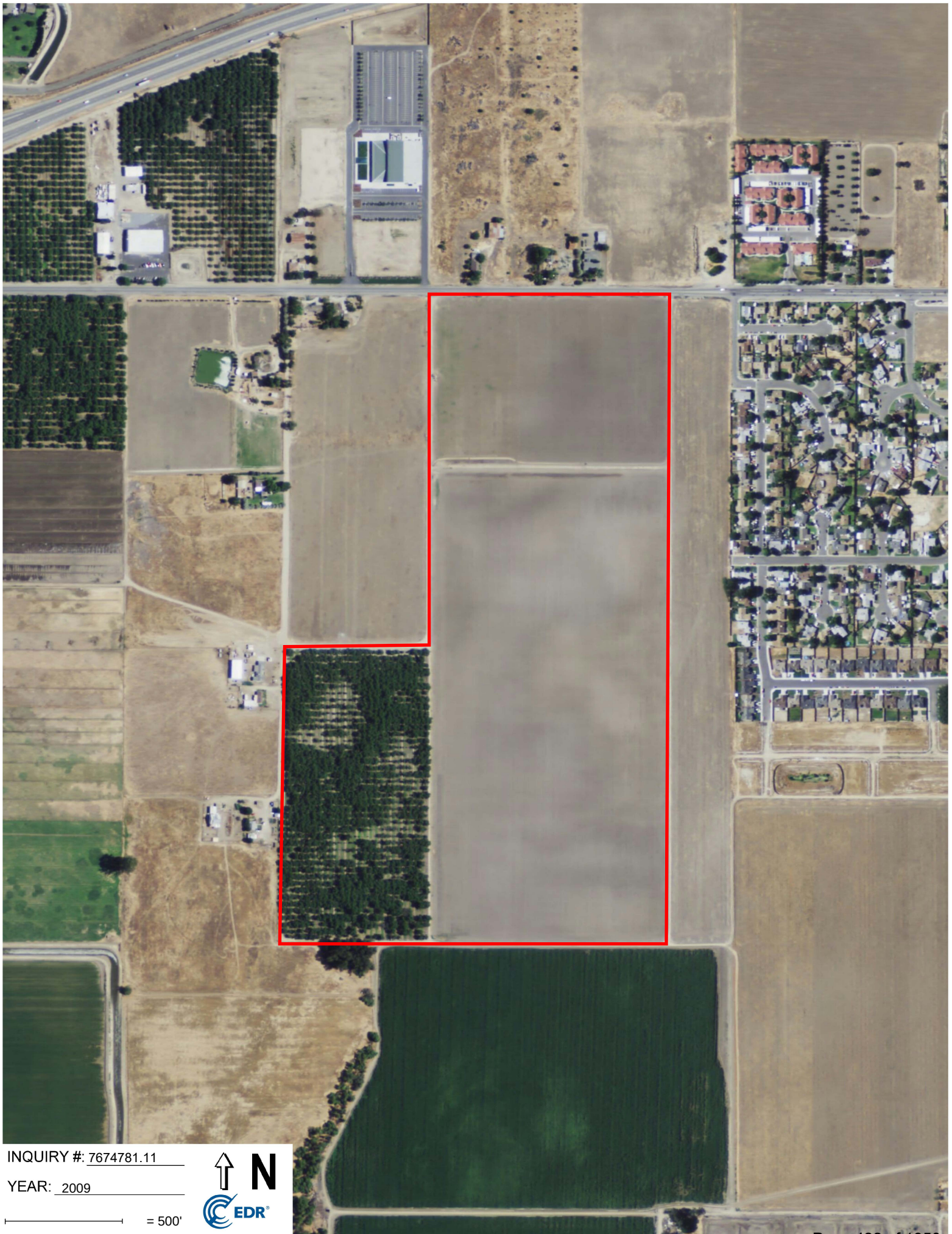
INQUIRY #: 7674781.11

YEAR: 2012

— = 500'







INQUIRY #: 7674781.11

YEAR: 2009

1" = 500'







INQUIRY #: 7674781.11

YEAR: 2006

— = 500'







INQUIRY #: 7674781.11

YEAR: 1994

— = 500'







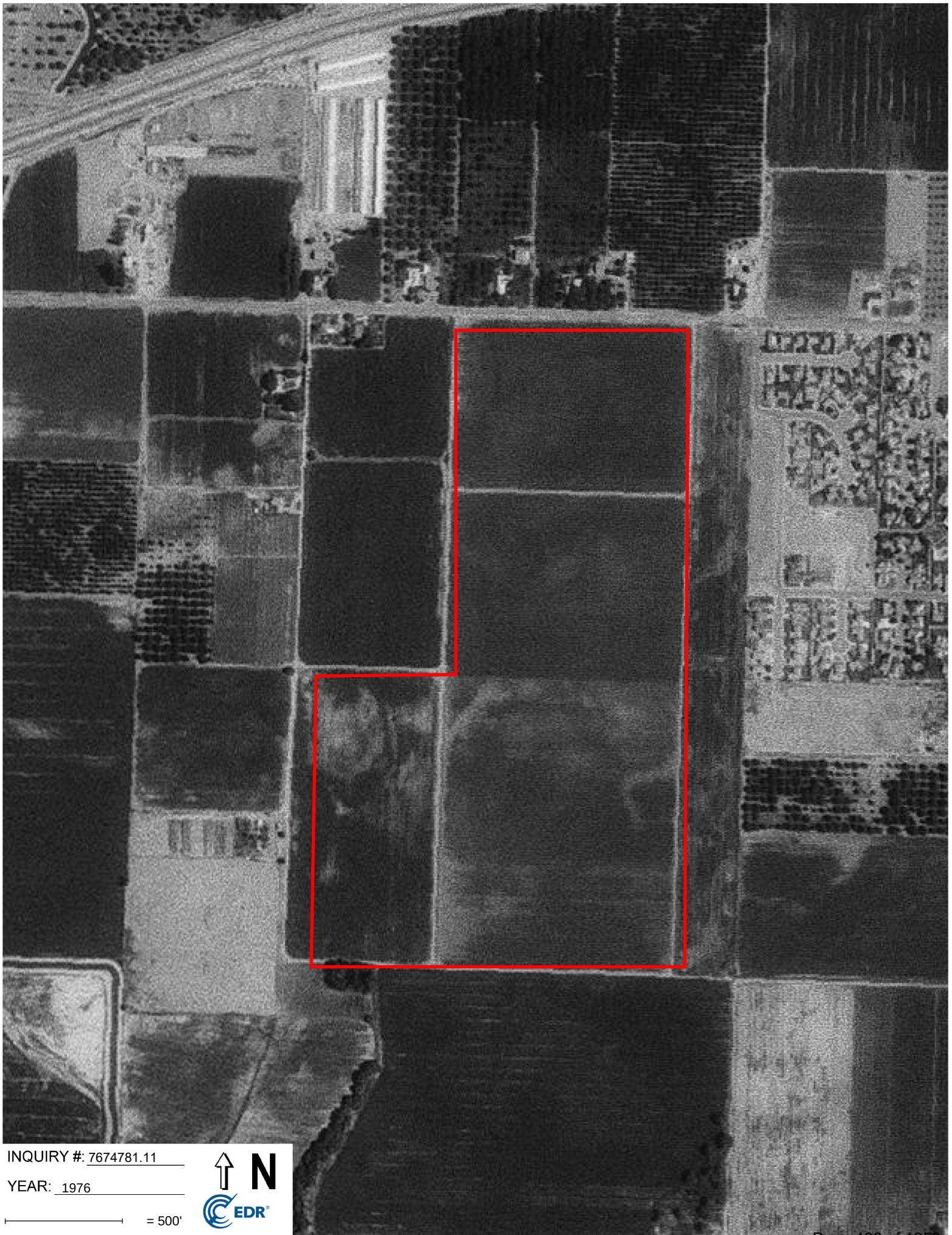
INQUIRY #: 7674781.11

YEAR: 1984

1" = 500'







INQUIRY #: 7674781.11

YEAR: 1976

— = 500'







INQUIRY #: 7674781.11

YEAR: 1974

— = 500'





INQUIRY #: 7674781.11

YEAR: 1950

— = 500'







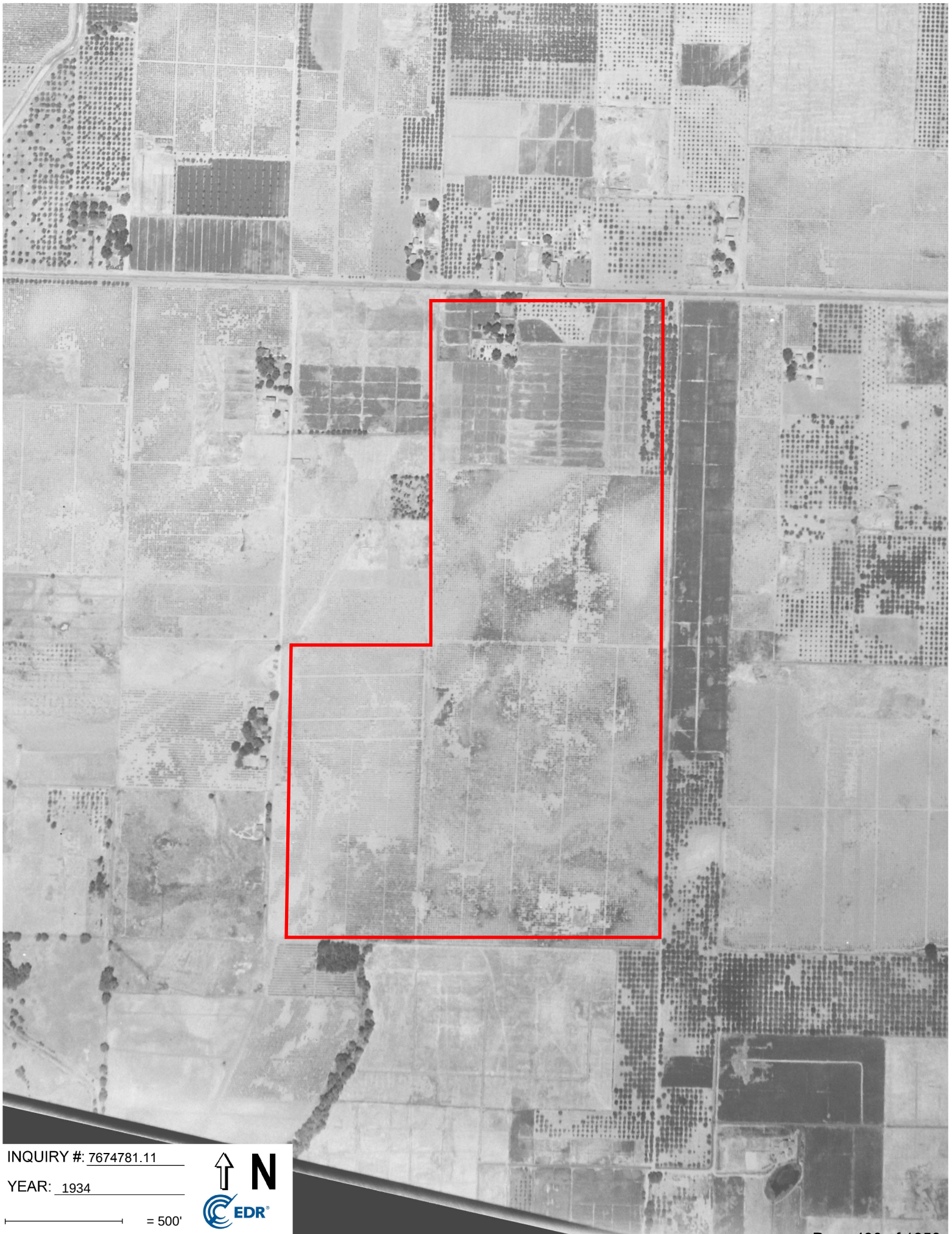
INQUIRY #: 7674781.11

YEAR: 1937

— = 500'







INQUIRY #: 7674781.11

YEAR: 1934

— = 500'





**VTTM 943**

Hanford Armona Road  
Hanford, CA 93230

Inquiry Number: 7674781.8  
June 06, 2024

# EDR Building Permit Report

Target Property and Adjoining Properties

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### SECTION

About This Report

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Glossary

***Thank you for your business.***

Please contact EDR at 1-800-352-0050  
with any questions or comments.

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## EDR BUILDING PERMIT REPORT

### About This Report

The EDR Building Permit Report provides a practical and efficient method to search building department records for indications of environmental conditions. Generated via a search of municipal building permit records gathered from more than 1,600 cities nationwide, this report will assist you in meeting the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E1527 - 21), or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

Building permit data can be used to identify current and/or former operations and structures/features of environmental concern. The data can provide information on a target property and adjoining properties such as the presence of underground storage tanks, pump islands, sumps, drywells, etc., as well as information regarding water, sewer, natural gas, electrical connection dates, and current/former septic tanks.

### Methodology

EDR has developed the EDR Building Permit Report through our partnership with BuildFax, the nation's largest repository of building department records. BuildFax collects, updates, and manages building department records from local municipal governments. The database now includes 30 million permits, on more than 10 million properties across 1,600 cities in the United States.

The EDR Building Permit Report comprises local municipal building permit records, gathered directly from local jurisdictions, including both target property and adjoining properties. Years of coverage vary by municipality. Data reported includes (where available): date of permit, permit type, permit number, status, valuation, contractor company, contractor name, and description.

Incoming permit data is checked at seven stages in a regimented quality control process, from initial data source interview, to data preparation, through final auditing. To ensure the building department is accurate, each of the seven quality control stages contains, on average, 15 additional quality checks, resulting in a process of approximately 105 quality control "touch points."

For more information about the EDR Building Permit Report, please contact your EDR Account Executive at (800) 352-0050.



## EXECUTIVE SUMMARY: SEARCH DOCUMENTATION

A search of building department records was conducted by Environmental Data Resources, Inc (EDR) on behalf of Geotek on Jun 06, 2024.

### TARGET PROPERTY

Hanford Armona Road  
Hanford, CA 93230

### SEARCH METHODS

EDR searches available lists for both the Target Property and Surrounding Properties.

### RESEARCH SUMMARY

Building permits identified: **YES**

The following research sources were consulted in the preparation of this report. An "X" indicates where information was identified in the source and provided in this report.

#### Hanford

| <u>Year</u> | <u>Source</u>                      | <u>TP</u> | <u>Adjoining</u> |
|-------------|------------------------------------|-----------|------------------|
| 2024        | City of Hanford, Building Division |           |                  |
| 2023        | City of Hanford, Building Division |           |                  |
| 2022        | City of Hanford, Building Division |           |                  |
| 2021        | City of Hanford, Building Division |           |                  |
| 2020        | City of Hanford, Building Division |           |                  |
| 2019        | City of Hanford, Building Division |           |                  |
| 2018        | City of Hanford, Building Division |           |                  |
| 2017        | City of Hanford, Building Division |           |                  |
| 2016        | City of Hanford, Building Division |           |                  |
| 2015        | City of Hanford, Building Division |           |                  |
| 2014        | City of Hanford, Building Division |           | X                |
| 2013        | City of Hanford, Building Division |           |                  |
| 2012        | City of Hanford, Building Division |           |                  |
| 2011        | City of Hanford, Building Division |           |                  |
| 2010        | City of Hanford, Building Division |           |                  |
| 2009        | City of Hanford, Building Division |           |                  |
| 2008        | City of Hanford, Building Division |           |                  |
| 2007        | City of Hanford, Building Division |           |                  |
| 2006        | City of Hanford, Building Division |           |                  |
| 2005        | City of Hanford, Building Division |           |                  |
| 2004        | City of Hanford, Building Division |           |                  |
| 2003        | City of Hanford, Building Division |           |                  |
| 2002        | City of Hanford, Building Division |           |                  |
| 2001        | City of Hanford, Building Division |           |                  |
| 2000        | City of Hanford, Building Division |           |                  |
| 1999        | City of Hanford, Building Division |           |                  |
| 1998        | City of Hanford, Building Division |           |                  |
| 1997        | City of Hanford, Building Division |           |                  |

## EXECUTIVE SUMMARY: SEARCH DOCUMENTATION

| <u>Year</u> | <u>Source</u>                      | <u>TP</u> | <u>Adjoining</u> |
|-------------|------------------------------------|-----------|------------------|
| 1996        | City of Hanford, Building Division |           |                  |
| 1995        | City of Hanford, Building Division |           |                  |
| 1994        | City of Hanford, Building Division |           |                  |
| 1993        | City of Hanford, Building Division |           |                  |
| 1992        | City of Hanford, Building Division |           |                  |
| 1991        | City of Hanford, Building Division |           |                  |
| 1990        | City of Hanford, Building Division |           |                  |
| 1989        | City of Hanford, Building Division |           |                  |
| 1988        | City of Hanford, Building Division |           |                  |
| 1987        | City of Hanford, Building Division |           |                  |
| 1986        | City of Hanford, Building Division |           |                  |
| 1985        | City of Hanford, Building Division |           |                  |
| 1984        | City of Hanford, Building Division |           |                  |
| 1983        | City of Hanford, Building Division |           |                  |
| 1982        | City of Hanford, Building Division |           |                  |
| 1981        | City of Hanford, Building Division |           |                  |
| 1980        | City of Hanford, Building Division |           |                  |
| 1979        | City of Hanford, Building Division |           |                  |
| 1978        | City of Hanford, Building Division |           |                  |
| 1977        | City of Hanford, Building Division |           |                  |
| 1976        | City of Hanford, Building Division |           |                  |
| 1975        | City of Hanford, Building Division |           |                  |
| 1974        | City of Hanford, Building Division |           |                  |
| 1973        | City of Hanford, Building Division |           |                  |
| 1972        | City of Hanford, Building Division |           |                  |
| 1971        | City of Hanford, Building Division |           |                  |
| 1970        | City of Hanford, Building Division |           |                  |

Name: JurisdictionName  
Years: Years  
Source: Source  
Phone: Phone

**BUILDING DEPARTMENT RECORDS SEARCHED**

Name: Hanford  
Years: 1970-2024  
Source: City of Hanford, Building Division, Hanford, CA  
Phone: (559) 585-2581

Name: Tulare County  
Years: 1985-2024  
Source: Tulare County, Community and Development Services Branch, TULARE, CA  
Phone: (559) 624-7100

Name: Kings County Unincorporated Area  
Years: 2000-2024  
Source: County of Kings, Community Development Agency, Hanford, CA  
Phone:

## TARGET PROPERTY FINDINGS

### TARGET PROPERTY DETAIL

Hanford Armona Road  
Hanford, CA 93230

No Permits Found

## ADJOINING PROPERTY FINDINGS

### ADJOINING PROPERTY DETAIL

The following Adjoining Property addresses were researched for this report. Detailed findings are provided for each address.

#### Hanford Armona Road

##### **Hanford Armona Road**

Date: **4/14/2014**  
Permit Type:  
Description: **3 ax trac/ 2ax trlr**

Permit Description:  
Work Class:  
Proposed Use:  
Permit Number: TP14-0038  
Status: APPROVED  
Valuation: \$0.00  
Contractor Company:  
Contractor Name:



## GLOSSARY

### General Building Department concepts

- **ICC:** The International Code Council. The governing body for the building/development codes used by all jurisdictions who've adopted the ICC guidelines. MOST of the US has done this. Canada, Mexico, and other countries use ICC codes books and guides as well. There are a few states who have added guidelines to the ICC codes to better fit their needs. For example, California has added seismic retrofit requirements for most commercial structures.
- **Building Department (Permitting Authority, Building Codes, Inspections Department, Building and Inspections):** This is the department in a jurisdiction where an owner or contractor goes to obtain permits and inspections for building, tearing down, remodeling, adding to, re-roofing, moving or otherwise making changes to any structure, Residential or Commercial.
- **Jurisdiction:** This is the geographic area representing the properties over which a Permitting Authority has responsibility.
- **GC:** General Contractor. Usually the primary contractor hired for any Residential or Commercial construction work.
- **Sub:** Subordinate contracting companies or subcontractors. Usually a "trades" contractor working for the GC. These contractors generally have an area of expertise in which they are licensed like Plumbing, Electrical, Heating and Air systems, Gas Systems, Pools etc. (called "trades").
- **Journeymen:** Sub contractors who have their own personal licenses in one or more trades and work for different contracting companies, wherever they are needed or there is work.
- **HVAC (Mechanical, Heating & Air companies):** HVAC = Heating, Ventilation, and Air Conditioning.
- **ELEC (Electrical, TempPole, TPole, TPower, Temporary Power, Panel, AMP Change, Power Release):** Electrical permits can be pulled for many reasons. The most common reason is to increase the AMPs of power in an electrical power panel. This requires a permit in almost every jurisdiction. Other commons reason for Electrical permits is to insert a temporary power pole at a new construction site. Construction requires electricity, and in a new development, power has yet to be run to the lot. The temporary power pole is usually the very first permit pulled for new development. The power is released to the home owner when construction is complete and this sometimes takes the form of a Power Release permit or inspection.
- **"Pull" a permit:** To obtain and pay for a building permit.
- **CBO:** Chief Building Official
- **Planning Department:** The department in the development process where the building /structural plans are reviewed for their completeness and compliance with building codes
- **Zoning Department:** The department in the development process where the site plans are reviewed for their compliance with the regulations associated with the zoning district in which they are situated.
- **Zoning District:** A pre-determined geographic boundary within a jurisdiction where certain types of structures are permitted / prohibited. Examples are Residential structure, Commercial/Retail structures, Industrial/Manufacturing structures etc. Each zoning district has regulations associated with it like the sizes of the lots, the density of the structures on the lots, the number of parking spaces required for certain types of structures on the lots etc.
- **PIN (TMS, GIS ID, Parcel#):** Property Identification Number and Tax Map System number.
- **State Card (Business license):** A license card issued to a contractor to conduct business.
- **Building Inspector (Inspector):** The inspector is a building department employee that inspects building construction for compliance to codes.
- **C.O.:** Certificate of Occupancy. This is the end of the construction process and designates that the owners now have permission to occupy a structure after its building is complete. Sometimes also referred to as a Certificate of Compliance.

## GLOSSARY

### Permit Content Definitions

- Permit Number: The alphanumeric designation assigned to a permit for tracking within the building department system. Sometimes the permit number gives clues to its role, e.g. a "PL" prefix may designate a plumbing permit.
- Description: A field on the permit form that allows the building department to give a brief description of the work being done. More often than not, this is the most important field for EP's to find clues to the prior use (s) of the property.
- Permit Type: Generally a brief designation of the type of job being done. For example BLDG-RES, BLDG-COM, ELEC, MECH etc.

### Sample Building Permit Data

Date: Nov 09, 2000

Permit Type: Bldg -

New Permit Number: 101000000405

Status: Valuation: \$1,000,000.00

Contractor Company: OWNER-BUILDER

Contractor Name:

Description: New one store retail (SAV-ON) with drive-thru pharmacy. Certificate of Occupancy.

**VTTM 943**

Hanford Armona Road  
Hanford, CA 93230

Inquiry Number: 7674781.5  
June 07, 2024

## The EDR-City Directory Image Report

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## EXECUTIVE SUMMARY

### DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Report is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Report includes a search of available business directory data at approximately five year intervals.

### RECORD SOURCES

The EDR City Directory Report accesses a variety of business directory sources, including Haines, InfoUSA, Polk, Cole, Bresser, and Stewart. Listings marked as EDR Digital Archive access Cole and InfoUSA records. The various directory sources enhance and complement each other to provide a more thorough and accurate report.

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### RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. A check mark indicates where information was identified in the source and provided in this report.

| <u>Year</u> | <u>Target Street</u>                | <u>Cross Street</u>      | <u>Source</u>                |
|-------------|-------------------------------------|--------------------------|------------------------------|
| 2020        | <input checked="" type="checkbox"/> | <input type="checkbox"/> | EDR Digital Archive          |
| 2017        | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Cole Information             |
| 2014        | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Cole Information             |
| 2010        | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Cole Information             |
| 2005        | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Cole Information             |
| 2000        | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Cole Information             |
| 1995        | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Cole Information             |
| 1992        | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Cole Information             |
| 1990        | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Haines Criss-Cross Directory |
| 1985        | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Haines Criss-Cross Directory |
| 1980        | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Haines Criss-Cross Directory |
| 1975        | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Haines Criss-Cross Directory |
| 1973        | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Haines Criss-Cross Directory |

## FINDINGS

### TARGET PROPERTY STREET

Hanford Armona Road  
Hanford, CA 93230

| <u>Year</u> | <u>CD Image</u> | <u>Source</u> |
|-------------|-----------------|---------------|
|-------------|-----------------|---------------|

### HANFORD ARMONA RD

|      |        |                              |
|------|--------|------------------------------|
| 2020 | pg A2  | EDR Digital Archive          |
| 2017 | pg A7  | Cole Information             |
| 2014 | pg A12 | Cole Information             |
| 2010 | pg A18 | Cole Information             |
| 2005 | pg A24 | Cole Information             |
| 2000 | pg A31 | Cole Information             |
| 1995 | pg A36 | Cole Information             |
| 1992 | pg A40 | Cole Information             |
| 1990 | pg A43 | Haines Criss-Cross Directory |
| 1990 | pg A44 | Haines Criss-Cross Directory |
| 1990 | pg A45 | Haines Criss-Cross Directory |
| 1985 | pg A46 | Haines Criss-Cross Directory |
| 1985 | pg A47 | Haines Criss-Cross Directory |
| 1980 | pg A48 | Haines Criss-Cross Directory |
| 1980 | pg A49 | Haines Criss-Cross Directory |
| 1975 | pg A50 | Haines Criss-Cross Directory |
| 1975 | pg A51 | Haines Criss-Cross Directory |
| 1973 | pg A52 | Haines Criss-Cross Directory |
| 1973 | pg A53 | Haines Criss-Cross Directory |
| 1973 | pg A54 | Haines Criss-Cross Directory |

## FINDINGS

### CROSS STREETS

No Cross Streets Identified

## **City Directory Images**



## HANFORD ARMONA RD 2020

|      |                                                                                            |
|------|--------------------------------------------------------------------------------------------|
| 1433 | ALBERT GRAAF<br>ALBERT VANDERGRAAF<br>DER VAN<br>MARINUS VANDERGRAAF<br>RIEKIE VANDERGRAAF |
| 1580 | ATM                                                                                        |
| 1660 | ATM                                                                                        |
| 2911 | B & R TEVELDE<br>B T V SENIOR HOUSING LLC<br>LONE OAK ENERGY LLC<br>SANTA FE FARMS INC     |
| 6025 | PATRICIA CARDOZA                                                                           |
| 6160 | BELLE LEAL<br>DANIEL LEAL<br>JULIAN AGUAYO                                                 |
| 6236 | BELLE ACQUISTAPACE<br>BELMIRA LEAL<br>DANIEL LEAL                                          |
| 6380 | EARL IRBY                                                                                  |
| 6431 | MANUEL TOSTE                                                                               |
| 6585 | SUSIE NORWOOD<br>TILDE NORWOOD                                                             |
| 6624 | CARLOS BORGES<br>LUZIA BORGES                                                              |
| 6672 | IRENE CORREIA<br>JASON CORREIA<br>KRISTI CLOWER<br>WYATT BUTTLE                            |
| 6714 | CHERYL DUTRA<br>EDDIE DUTRA                                                                |
| 6749 | DAVID CLACHER<br>KARA CLACHER<br>SANTIAGO RODRIGUEZ                                        |
| 6750 | ANDREW JAMES                                                                               |
| 6780 | DAVID KELLENBERGER<br>TAMMI KELLENBERGER                                                   |
| 6812 | LYNNE ELLIS                                                                                |
| 6850 | ELAINE MEYER<br>FRANK MEYER                                                                |
| 6894 | IGNACIO GARZA                                                                              |
| 6976 | DIANE TAMEZ<br>GLORIA TAMEZ<br>PEDRO TAMEZ<br>RICARDO TAMEZ                                |
| 7140 | DAVID GONZALEZ                                                                             |
| 7184 | WILLIAM COX                                                                                |
| 7216 | ELUTERIO CORONADO<br>FLORIBERTA CORONADO                                                   |
| 7252 | CATALINA QUIRINO<br>FLORITA ALCARAZ                                                        |

## HANFORD ARMONA RD 2020 (Cont'd)

|       |                                                            |
|-------|------------------------------------------------------------|
| 7480  | BAKER COMMODITIES INC<br>DOUGLAS FLETCHER                  |
| 7533  | THRESHER INDUSTRIES INC                                    |
| 7761  | SOUTH VALLEY MATERIALS INC<br>VALLEY READY MIX             |
| 7803  | KINGS WASTE & RECYCLING                                    |
| 8038  | PATRICK BRASIL                                             |
| 8076  | BRIAN SOUSA<br>JENNIFER SOUSA                              |
| 8211  | DAVID DANELL<br>DEZERAYE DANELL                            |
| 8265  | BILL DANELL<br>CLAIRE DANELL<br>JR LAND CO LLC             |
| 8395  | JOSE TEIXEIRA<br>LIZUARTE TEIXEIRA<br>MARIA TEIXEIRA       |
| 8415  | JOHN TEIXEIRA<br>MARIA TEIXEIRA                            |
| 8471  | CECELIA PEREZ<br>LUPE PEREZ                                |
| 8945  | LEONARD MATTOS                                             |
| 9102  | LONNIE CLEMENT                                             |
| 9144  | MARGARET BORBOLLA<br>RALPH BORBOLLA                        |
| 9184  | ADRIANNA LUNA<br>ANGEL LUNA<br>HAROLD PRIETO<br>KELLY LUNA |
| 9248  | GENEVIEVE MAGNIA<br>GUADALUPE MAGNIA<br>LUPE MAGNIA        |
| 9513  | GLORIA DURAN<br>JOHNNY DURAN                               |
| 9539  | GUS LOPEZ<br>OTILIA LOPEZ                                  |
| 9615  | YVONNE GARZA                                               |
| 9839  | R-N-R WELDING<br>SAN JOSE MOTOSPORTS INC                   |
| 10519 | ANTHONY SANTOS<br>BUFFY SANTOS                             |
| 10556 | ADDIE BURKETT<br>SANDRA BURKETT                            |
| 10700 | HANFORD COMMODITIES LLC                                    |
| 10833 | CRICKET WIRELESS AUTH RETAILER<br>EL REY SUPERMERCADO      |
| 10870 | JERRY WOOD                                                 |
| 10874 | VERA DIETRICH<br>WILLIAM DIETRICH                          |
| 10890 | BRENDA JONES                                               |

## HANFORD ARMONA RD 2020 (Cont'd)

10898 JOSE AMARAL  
 JOSE PALOMERA  
 10904 DONALD GILBERT  
 10912 MALVIN GIPSON  
 10914 PAULA ROBINSON  
 10915 DHARAM MANAGEMENT LLC  
 STOP ZONE INC  
 10918 CHERYL WARMERDAM  
 10926 WILFRIDO VALENTINE  
 10928 KATHY FLORES  
 10936 JOSE CAJERO  
 MARIA CAJERO  
 10937 AUGIE JAURIGUI  
 EMMA JAURIGUI  
 LEROY JAURIGUI  
 SAMANTHA JAURIGUI  
 10938 ARNOLD ALCALA  
 10942 RONDA SILVA  
 10946 OLIVE MCHANNEY  
 10948 BEATRICE MARTIN  
 10954 BELAIR MOBILE HOME PARK  
 JUDITH GRIFFITHS  
 LEROY GRIFFITH  
 LESTER HAUGHT  
 10992 GLENN JAMES  
 10994 SUSAN EAST  
 10998 CLARENCE STROUP  
 DEBRA DODD  
 SANDRA STROUP  
 11130 MARISSA NUNES  
 11151 ANGELO NATALI  
 CAIN SANCHEZ  
 11212 JARRED CORDEIRO  
 MARIO CORDEIRO  
 11274 CALVARY CHRISTIAN CTR  
 11303 BRIAN MARTINEZ  
 LOUIS MARTINEZ  
 MARTINEZ MARINA  
 11356 FUKUKO HAAS  
 WALTER HAAS  
 11386 DEBORAH MINCHUE  
 DICKIE MINCHUE  
 JC MINCHUE  
 VICKIE MINCHUE  
 11400 ETHAN VELACRUZ  
 RUSSELL CHISM  
 11402 MARLENE MACEDO  
 WILLIAM MACEDO  
 11454 CYNTHIA LONG  
 GALEN LONG

# HANFORD ARMONA RD 2020 (Cont'd)

|       |                               |
|-------|-------------------------------|
| 11454 | KENNETH LONG                  |
| 11474 | IAN TREADWELL                 |
|       | IRENE TREADWELL               |
|       | JONATHAN TREADWELL            |
| 11526 | JOEL CASTILLO                 |
| 11540 | FRANCISCO SIGALA              |
| 12150 | NORMA MARTINEZ                |
| 12168 | JERRY KENNEDY                 |
|       | SUSAN KENNEDY                 |
| 12182 | MELVIN EVANS                  |
| 12184 | CASA DEL SOL                  |
| 12188 | ADRIANA QUINONES              |
|       | ANESSA AGREDANO               |
|       | IVAN AGREDANO                 |
| 12192 | ANDREW YBARRA                 |
|       | KAREN GARCIA                  |
|       | TAMMY JACKSON                 |
| 12196 | KIMBERLY BURCH                |
| 12202 | ROSEANNE DELGADO              |
| 12204 | PAULINE MOZ                   |
| 12208 | VINCENT INGELLIS              |
| 12358 | ADOLFO MENDOZA-SOSA           |
|       | AMPARO MENDOZA-SOSA           |
| 12536 | KOINONIA CHRISTIAN FELLOWSHIP |
| 12591 | GINA CATTUZZO                 |
|       | RICK WILLIAMS                 |
| 12628 | KINGS PANTRY                  |
| 12629 | DONNA THOMAS                  |
| 12642 | ALLEGIANCE COLLISION          |
|       | J N NELSON PROPERTIES LLC     |
| 12645 | ERIK ROCHA                    |
|       | LEONARD DUTRA                 |
|       | MARGARET DUTRA                |
|       | MELANIE DUTRA                 |
|       | NADINE DUTRA                  |
| 12659 | ANGIE DUTRA                   |
|       | HENRY DUTRA                   |
|       | JUSTIN DUTRA                  |
| 12918 | MORGAN & SLATES MFG & SUPLS   |
| 12939 | JOSE AGUILAR                  |
| 13180 | BARBER STORAGE                |
|       | HANFORD PURELY STORAGE        |
|       | LISA BANKY                    |
|       | RUSSELL BANKY                 |
| 13225 | D D N K INC                   |
|       | G2 AUTO LOCATORS              |
|       | GTWO PARTNERS                 |
| 13235 | AUTOMOTIVE PERFORMANCE        |
| 13321 | HANFORD TOWING SVC            |
| 13375 | QUALITY MACHINERY CTR         |

**HANFORD ARMONA RD 2020 (Cont'd)**

|       |                                                                                                                     |
|-------|---------------------------------------------------------------------------------------------------------------------|
| 13400 | LAYNE<br>MMIM INC                                                                                                   |
| 13405 | JIM MACIEL<br>KATHRYN MACIEL                                                                                        |
| 13488 | ALEX LARSON<br>AMERICAN TRAVELING SHOWS<br>JACQUELINE LARSON                                                        |
| 13520 | JESUS RODRIQUEZ                                                                                                     |
| 13529 | ALFONSO ORTEGA<br>JOE SILVEIRA<br>MARY ORTEGA<br>SILVEIRA'S AIR CONDITIONING                                        |
| 13539 | MICHAEL YATTY                                                                                                       |
| 13549 | KINGS COMMUNITY ACTION ORG-OPR                                                                                      |
| 13594 | MITCHELL'S AIR CONDITIONING<br>SUSAN MITCHELL                                                                       |
| 13704 | AQUA AZUL<br>CANNERY INDUSTRIAL PARK<br>CENTRAL VALLEY HEALTH TRNSPRT<br>COLLINS AIR<br>GMT GAME<br>WINDTAMER TARPS |
| 14514 | JOHN LABANDEIRA                                                                                                     |
| 14552 | LAURA KILNER                                                                                                        |
| 14570 | CHARLES YOUNG                                                                                                       |
| 14670 | KINGS COUNTY AIR COND INC                                                                                           |
| 14992 | DAVID BOWMAN                                                                                                        |

**HANFORD ARMONA RD 2017**

1318 HANFORD ARMONA SELFSTORAGE  
 1365 STUHAAN, EVERETT  
 6236 LEAL, KURT A  
 6255 RODRIGUEZ, ZENAIDA N  
 6380 IRBY, EARL B  
 6431 TOSTE, MANUEL B  
 6435 KELI, NANCY  
 6585 NORWOOD, RICHARD  
 6624 BORGES, CARLOS A  
 6672 CORREIA, JASON M  
 6713 TORRES, ADRIANA A  
 6749 CLACHER, AARON M  
 D C ELECTRIC  
 6780 KELLENBERGER, DAVID W  
 6812 ELLIS, JOHN C  
 6850 MEYER, FRANK F  
 6976 TAMEZ, RICARDO R  
 7184 COX, WILLIAM F  
 7216 CORONADO, FRANCIS V  
 7479 AGUILAR, JOSE B  
 7480 BAKER COMMODITIES INCKERMANN DIVISIO  
 BAKER COMMODITIES INCKINGS TULARE  
 FLETCHER, DOUGLAS D  
 7761 SOUTH VALLEY MATERIALS INC  
 VALLEY READY MIX  
 7767 KENNIES INDOOR COMFORT SPECIALISTS  
 7803 KINGS WASTE & RECYCLING AUTH  
 7818 PEREIRRA, JOSEPH B  
 8038 BRASIL, PATRICK D  
 8211 DANELL, DAVID M  
 8265 DANELL BROS CUSTOM CHOPPING  
 8395 TEIXEIRA, MARIA J  
 8471 PEREZ, ALEXANDER M  
 9144 BORBOLLA, RALPH R  
 9184 LUNA, ANGEL D  
 9539 LOPEZ, CARLOS  
 9615 GARZA, YVONNE M  
 9617 DUTRA, TONY  
 9619 TRUJILLO, LAWRENCE L  
 9839 RNR WELDING  
 9845 CENTRAL VALLEY COOPERATIVE  
 10355 IMMACULATE HEART  
 10435 IMMACULATE HEART OF MARY CHURCH  
 ROMAN CATHOLIC BISHOP THE  
 10443 BRISTOL, ROBERT  
 10519 ESCOBAR, MARISELA  
 10531 AGUILAR, ANGELICA  
 10556 BURKETT, SANDRA L  
 10569 CERON, LUIS  
 10623 RANGEL, CHRISTOPHER

# HANFORD ARMONA RD 2017 (Cont'd)

|       |                               |
|-------|-------------------------------|
| 10626 | SAENZ, LYNDA                  |
| 10700 | HANFORD COMMODITIES LLC       |
|       | HANFORD COMMODITIES TRANSPORT |
| 10833 | DOLLAR RENT A CAR             |
|       | RN MARKET                     |
| 10862 | LEON, HILARIO                 |
| 10864 | GUECHO, RONALD J              |
| 10870 | WOOD, JERRY E                 |
| 10872 | IVINGS, RICHARD               |
| 10874 | DIETRISH, VERA B              |
| 10876 | GONZALEZ, ADRIANA             |
| 10878 | SHEPHERD, RONALD L            |
| 10880 | SHERWOOD, LESLIE W            |
| 10882 | LICON, DIXIE L                |
| 10886 | MALDONADO, MARIA T            |
| 10888 | ABLES, SHIRLEY                |
| 10890 | CIBRIAN, MARIA G              |
| 10892 | ACOSTA, LOIS L                |
| 10894 | SANCHEZ, GEMA                 |
| 10896 | ANA, ZAZUETA                  |
| 10898 | PALOMERA, JOSE                |
| 10900 | CANTORIANO-ANDRACA, ELIO      |
| 10904 | GILBERT, DONALD               |
| 10910 | ALVES, TIMOTHY A              |
| 10912 | KNAUER, KATHRYN               |
| 10914 | ROBINSON, JOHNNY G            |
| 10915 | STOP ZONE INC                 |
| 10916 | ALVAREZ, FRANCISCO            |
| 10918 | WARMERDAM, CHERYL L           |
| 10920 | CORONADO, HENRY               |
| 10924 | WILLIAMS, JACKIE              |
| 10926 | VALENTINE, WILFRED C          |
| 10930 | DENISON, SHERYL               |
| 10934 | POTTER, LEROY                 |
| 10936 | CAJERO, JOSE                  |
| 10937 | JAURIGUI, LEROY P             |
| 10940 | TAJUM, MATTHEW                |
| 10942 | SILVA, RONDA N                |
| 10946 | MCHANAY, BILLY F              |
| 10948 | MARTIN, BEATRICE              |
| 10950 | LUGO, JEANNINE R              |
| 10954 | BEL AIR MOBILE HOME PARK      |
|       | GRIFFITH, LEROY L             |
| 10958 | RAMIREZ, EVELYN               |
| 10960 | HAMMOND, JAY                  |
| 10992 | JAMES, GLEN E                 |
| 10994 | QUAIR, ELEANOR                |
| 10998 | STROUP, CLARENCE C            |
| 11122 | VENTURA, JOSE                 |
| 11124 | DUONG, PHUONG V               |

## HANFORD ARMONA RD 2017 (Cont'd)

|       |                          |
|-------|--------------------------|
| 11126 | BLAZQUEZ, VENANCIO       |
| 11132 | SOLARIO, HELEN           |
| 11134 | LEWIS, DAVID L           |
| 11151 | SANCHEZ, CAIN            |
| 11212 | CORDEIRO, MARIO D        |
| 11274 | CALVARY CHRISTIAN CENTER |
| 11303 | MANITAS DEAMOR           |
|       | MARTINEZ, BRIAN I        |
| 11356 | HAAS, WALTER G           |
| 11386 | SPOLINI, GARY L          |
| 11400 | CHISM, RUSSELL J         |
| 11402 | MACEDO, WILLIAM E        |
| 11454 | LONG, DAVID L            |
| 11474 | TREADWELL, JONATHAN D    |
| 11526 | CASTILLO, JOEL R         |
| 11540 | SIGALA, FRANCISCO        |
| 12168 | KENNEDY, JERRY A         |
| 12182 | REEVES, TERRI L          |
| 12184 | CASA DEL SOL             |
| 12186 | GARCIA, SHARON R         |
|       | HAMILTON, RENAE          |
|       | MORAN, LUIS D            |
|       | PEREZ, BAUDELIO          |
|       | WRIGHT, RODERICK N       |
| 12188 | AGREDANO, ANESSA M       |
|       | QUINONES, EUGENI         |
|       | SAUCEDO, SANDRA          |
| 12190 | JOHNSON, MARILYN L       |
|       | RANGEL, MARIA D          |
| 12192 | CHAVEZ, JOSEFA           |
|       | GARCIA, PHILLIP E        |
|       | RANGEL, JOSE N           |
| 12194 | ANGELA, CORONA           |
| 12198 | CARRANZA, ALICIA         |
|       | GARCIA, ANACCA           |
|       | HIGINIA, RAMIRIZ Z       |
|       | NUNO, JOSE A             |
|       | SALAZAR, MARIA D         |
|       | SERNA, HELEN R           |
| 12200 | CERVANTEZ, TINO          |
|       | FULLER, JODI L           |
|       | ROSSEL, ROSALINDA C      |
|       | STARR, CHARLES R         |
|       | WILSON, SONIA            |
| 12202 | FERNANDEZ, R             |
|       | RODRIGUEZ, ANTONETTE     |
|       | ULLOA, MARIBETH          |
| 12204 | DAUENHAUER, DAVID R      |
|       | GARCIA, JENNIFER         |
|       | GARCIA, LILIANA          |



## HANFORD ARMONA RD 2017 (Cont'd)

|       |                                                                                                                  |
|-------|------------------------------------------------------------------------------------------------------------------|
| 12204 | MEDEIROS, ELIZABETH<br>MOZ, PAULINE D<br>VALDERIA, SANDRA                                                        |
| 12206 | JOHN, CANO<br>PUGA, MIGUEL                                                                                       |
| 12208 | GUILLEN, LISA<br>PIZANO, LUZ M<br>RAMOS, ANA M                                                                   |
| 12358 | MAGANA, ADOLFO M                                                                                                 |
| 12536 | FUTURE HOPE PRESCHOOL<br>KOINONIA CHRISTIAN FELLOWSHIP                                                           |
| 12589 | LARA-SITIZ, ANDY                                                                                                 |
| 12591 | WILLIAMS, RICK B                                                                                                 |
| 12628 | KINGS PANTRY                                                                                                     |
| 12629 | THOMAS, DONNA L                                                                                                  |
| 12642 | PREMIERE COLLISION CENTER<br>PRO TOW                                                                             |
| 12659 | DUTRA, LEONARD A                                                                                                 |
| 12918 | MORGAN & SLATES INC                                                                                              |
| 12939 | AGUILAR, JOSE A                                                                                                  |
| 13069 | SD ATV SERVICE                                                                                                   |
| 13159 | VETERINARY PHARMACEUTICALS INC                                                                                   |
| 13180 | HANFORD ARMONA SELFSTORAGE                                                                                       |
| 13225 | PEDDLERS MALL<br>UHAUL                                                                                           |
| 13235 | AUTOMOTIVE PERFORMANCE                                                                                           |
| 13291 | HUFFENBERGER RESTORATIONS<br>M C TRUCK & TRAILER PARTS                                                           |
| 13321 | HANFORD TOWING SERVICE                                                                                           |
| 13375 | GRANGER WATER SPECIALTIES<br>QUALITY MACHINERY CENTER                                                            |
| 13400 | KIDS BARN LLC<br>LAYNE                                                                                           |
| 13405 | MACIEL, JIM K                                                                                                    |
| 13488 | LARSON, RICK L                                                                                                   |
| 13508 | FIVE STAR MINI STORAGE                                                                                           |
| 13520 | RODRIQUEZ, JESUS                                                                                                 |
| 13529 | SILVEIR, JOE M<br>SILVEIRAS AIR CONDITIONING & HEATIN                                                            |
| 13539 | YATTY, MICHAEL M                                                                                                 |
| 13549 | KINGS COMMUNITY ACTION ORGANIZATION                                                                              |
| 13594 | MITCHELL, SUSAN L<br>MITCHELLS AIR CONDITIONING & HEATIN                                                         |
| 13704 | CENTRAL VALLEY HEALTH TRANSPORT<br>COLLINS AIR<br>G M T GAMES<br>HOUR OF TRUTH MINISTRIES INC<br>WINDTAMER TARPS |
| 13738 | J & D JOSHUAS TOWING                                                                                             |
| 13784 | FRANKS ARMONA AUTO BODY                                                                                          |

**HANFORD ARMONA RD 2017 (Cont'd)**

14514 LABANDEIRA, JANENE M  
14570 YOUNG, CECELIA  
14666 LIU, CYNTHIA M  
14670 KINGS COUNTY AIR CONDITIONING INC  
14724 CENTRAL VALLEY ROD & RESTORATIONS  
14992 MARVIN, LINDA D

**HANFORD ARMONA RD 2014**

|      |                                      |
|------|--------------------------------------|
| 1058 | JACQUILLARD, PAMELA                  |
| 1115 | NATALL, ANGELO                       |
| 1433 | VANDER, GRAAF A                      |
| 2511 | OCCUPANT UNKNOWN,                    |
| 2911 | OCCUPANT UNKNOWN,                    |
| 6160 | HOOVER, JAMES R                      |
| 6236 | LEAL, DANNY J                        |
| 6255 | RODRIGUEZ, NIKE                      |
| 6380 | IRBY, EARL B                         |
| 6431 | TOSTE, MANUEL B                      |
| 6435 | KELI, NANCY                          |
| 6509 | COELHO, TELMO                        |
| 6585 | NORWOOD, SUSIE M                     |
| 6624 | BORGES, CARLOS A                     |
| 6672 | OCCUPANT UNKNOWN,                    |
| 6713 | TORRES, ADRIANA A                    |
| 6714 | DIAS, JACLYN                         |
| 6749 | CLACHER, AARON M                     |
|      | D C ELECTRIC                         |
| 6750 | DUTRA, EDDIE S                       |
| 6780 | KELLENBERGER, DAVID W                |
| 6812 | ELLIS, JOHN C                        |
| 6850 | MEYER, FRANK F                       |
| 6894 | GARZA, IGNACIO G                     |
| 6976 | TAMEZ, RICARDO R                     |
| 7140 | CORONADO, JESUS                      |
| 7184 | COX, WILLIAM F                       |
| 7216 | CORONADO, FRANCIS V                  |
| 7252 | VRYHOF, KIMBERLY L                   |
| 7257 | OCCUPANT UNKNOWN,                    |
| 7441 | OCCUPANT UNKNOWN,                    |
| 7479 | AGUILAR, JOSE B                      |
| 7480 | BAKER COMMODITIES INCKERMAN DIVISIO  |
|      | BAKER COMMODITIES INCKINGS TULARE    |
|      | FLETCHER, DOUGLAS D                  |
|      | KINGS TULARE TALLOW DIVISION OF BAKE |
| 7761 | SOUTH VALLEY MATERIALS               |
|      | SOUTH VALLEY MATERIALS INC           |
|      | VALLEY READY MIX                     |
| 7767 | KENNIES INDOOR COMFORT SPECIALISTS I |
| 7803 | KINGS WASTE & RECYCLING AUTH         |
| 7818 | PEREIRRA, JOSEPH B                   |
| 8038 | OCCUPANT UNKNOWN,                    |
| 8076 | GOMES, MICHAEL T                     |
|      | PROLITE SIGNS                        |
| 8211 | DANELL, DAVID M                      |
| 8263 | DANELL, CLAIRE L                     |
| 8265 | DANELL BROS CUSTOM CHOPPING          |
| 8395 | TEIXEIRA, JOSE L                     |
| 8415 | HOLLAR, PAUL R                       |

# HANFORD ARMONA RD 2014 (Cont'd)

|       |                                 |
|-------|---------------------------------|
| 8471  | PEREZ, ALEXANDER M              |
| 9102  | CLEMENT, LONNIE                 |
| 9144  | BORBOLLA, RALPH R               |
| 9184  | COTTA, CYNTHIA                  |
| 9248  | MAGNIA, LUPE                    |
| 9513  | DURAN, GREGORY V                |
| 9539  | LOPEZ, CARLOS                   |
| 9615  | WULFFENSTEIN, BESSIE            |
| 9617  | DUTRA, TONY                     |
| 9619  | TRUJILLO, LAWRENCE L            |
| 9839  | R NR WELDING                    |
| 9842  | OCCUPANT UNKNOWN,               |
| 9845  | CENTRAL VALLEY COOPERATIVE      |
| 10355 | IMMACULATE HEART                |
| 10435 | IMMACULATE HEART OF MARY CHURCH |
| 10443 | ASPEITIA, PIERRE                |
| 10519 | ESCOBAR, MARISELA               |
| 10531 | BASS, ANTHONY                   |
| 10556 | BURKETT, SANDRA L               |
| 10569 | CERON, LUIS                     |
| 10595 | OCCUPANT UNKNOWN,               |
| 10623 | DELACRUZ, STEVE D               |
| 10626 | SAENZ, LYNDA                    |
| 10628 | WHARRY, WILLIAN                 |
| 10630 | FRANKLIN, ARETHA E              |
| 10632 | OCCUPANT UNKNOWN,               |
| 10636 | OCCUPANT UNKNOWN,               |
| 10700 | HANFORD COMMODITIES LLC         |
|       | HANFORD COMMODITIES TRANSPORT   |
| 10833 | DOLEX                           |
|       | JOYERIA FB                      |
|       | RN MARKET                       |
| 10862 | LEON, HILARIO                   |
| 10864 | GUECHO, RONALD J                |
| 10868 | OCCUPANT UNKNOWN,               |
| 10870 | OCCUPANT UNKNOWN,               |
| 10872 | DENISON, SHERYL                 |
| 10874 | DIETRICH, WILLIAM E             |
|       | DIETRISH, VERA B                |
| 10876 | GONZALEZ, ADRIANA               |
| 10878 | SHEPHERD, RONALD L              |
| 10880 | SHERWOOD, M W                   |
| 10882 | LICON, DIXIE L                  |
| 10886 | MALDONADO, MARIA T              |
| 10888 | ABLES, SHIRLEY                  |
| 10890 | CIBRIAN, GUADALUPE              |
| 10894 | SANCHEZ, GEMA                   |
| 10896 | ANA, ZAZUETA                    |
| 10898 | HENDRICKSON, RICHARD M          |
|       | PALOMERA, JOSE                  |

# **HANFORD ARMONA RD 2014 (Cont'd)**

10900 CANTORIANO-ANDRACA, ELIO  
 ENSALDO, IRENE  
 10902 LIMA, MAYRA  
 10904 GILBERT, DONALD  
 10906 BETTENCOURT, LEONARD M  
 10908 DUTRA, MANUEL  
 10910 ALVES, TIMOTHY A  
 10912 TAYLOR, LORA E  
 10914 JENSEN, SHELLY M  
 10915 STOP ZONE INC  
 10916 ALVAREZ, FRANCISCO  
 10918 MCDONALD, CYRENA A  
 WARMERDAM, CHERYL L  
 10920 ROMERO, MAYRA  
 10924 WILLIAMS, JACKIE  
 10926 VALENTINE, WILFRED C  
 10928 HAMMOND, JAY  
 10930 WOOD, BOBBY  
 10932 BOYCE, MARTHA L  
 10934 POTTER, LEROY  
 10936 CAJERO, MARIA L  
 10937 JAURIGUI, LEROY P  
 10940 OCCUPANT UNKNOWN,  
 10942 SILVA, RONDA N  
 10946 MCHANEY, BILLY F  
 10948 MARTIN, BEATRICE  
 10950 LUGO, HILARIO  
 10952 OCCUPANT UNKNOWN,  
 10954 BEL AIR MOBILE HOME PARK  
 GRIFFITH, LEROY L  
 10958 CRANFORD, MARALYN J  
 DAVIS, ALFRED L  
 10960 OCCUPANT UNKNOWN,  
 10962 OCCUPANT UNKNOWN,  
 10964 OCCUPANT UNKNOWN,  
 10970 BERRY, SARAH  
 10972 OCCUPANT UNKNOWN,  
 10974 OCCUPANT UNKNOWN,  
 10975 SILVA, RICHARD  
 10976 OCCUPANT UNKNOWN,  
 10986 OCCUPANT UNKNOWN,  
 10990 WILES, AMANDA E  
 10992 ABLES, JIMMY L  
 10994 EAST, JOHN  
 10998 STROUP, CLARENCE C  
 11122 CELAYA, JOSE O  
 11124 DUONG, PHUONG V  
 11126 BLAZQUEZ, VENANCIO  
 11130 FERNANDEZ, EFREN  
 11132 SOLARIO, HELEN

# **HANFORD ARMONA RD 2014 (Cont'd)**

11134 LEWIS, DAVID L  
 11136 ALNAGAR, G  
 11151 OCCUPANT UNKNOWN,  
 11212 OCCUPANT UNKNOWN,  
 11274 CALVARY CHRISTIAN CENTER  
 11303 MANITAS DE AMOR PRESCHOOL & CHILDCAR  
 MARTINEZ, LOUIS M  
 11356 HAAS, WALTER G  
 11386 MINCHUE, DICKIE L  
 11400 CHISM, RUSSELL J  
 11402 MACEDO, WILLIAM E  
 11454 LONG, DAVID L  
 11464 OCCUPANT UNKNOWN,  
 11474 TREADWELL, JON D  
 11526 OCCUPANT UNKNOWN,  
 11540 SIGALA, FRANCISCO  
 11580 MARTINEZ, PAULINE  
 12150 OCCUPANT UNKNOWN,  
 12168 KENNEDY, JERRY A  
 12182 CHAVEZ, SYLVIA  
 MEDEIROS, RICKEY  
 12184 CASA DEL SOL  
 12186 CASTRO, MOISES  
 ESPINOZA, YESENIA  
 FOSTER, CRYSTAL  
 GARCIA, SHARON R  
 HOLMES, CHARLOTT L  
 LAVARES, YOSSI  
 MONCADA, MARITZA  
 RODRIGUEZ, NORMA  
 SOLIS, MAXINE I  
 12188 AGREDANO, ANESSA M  
 PRIGGETT, TERRY  
 SAUCEDO, SANDRA  
 TAMAYO, VIRGINIA  
 12190 BOTELLO, ALEJANDRA  
 JOHNSON, MARILYN L  
 SMITH, GUADALUPE  
 12192 DELACRUZ, MIKE M  
 GARCIA, PHILLIP T  
 VALDEZ, ORTIZ C  
 12194 JARAMILLO, DORA M  
 12196 GRANADOS, AMILCAR  
 12198 GARCIA, ANGELA  
 GONZALEZ, ANNA  
 HIGINIA, RAMIRIZ Z  
 MEDINA, FELICIANO  
 ORELLANA, SANDRA  
 SERNA, HELEN R  
 ZARAGOZA, MARIA O

# **HANFORD ARMONA RD 2014 (Cont'd)**

12200 FULLER, JODI L  
 GARZIA, ISABEL  
 RONQUILLO, JOHN A  
 ROSSEL, ROSALINDA C  
 12202 FERNANDEZ, R  
 MONTOYA, DANIELL  
 RODRIGUEZ, MARCI  
 ULLOA, MARIBETH  
 12204 GARCIA, LILIANA  
 MOZ, PAULINE D  
 RODRIGUEZ, NORMA G  
 12206 AGUAYO, R  
 BESOUGLOFF, PETER I  
 LISA, DESOTO  
 MORENO, GLORIA  
 TORRES, AMY E  
 12208 FAGUNDES, ASHLEY  
 GIRON, KIMBERLY  
 LOPEZ, R  
 MACIEL, MEELENA  
 PIZANO, LUZ M  
 RAMOS, ANA M  
 SNOW, KARI  
 12246 OCCUPANT UNKNOWN,  
 12358 PENSIERO, GENE  
 12406 WINTERBERG, WILLIAM L  
 12458 SILKWOOD, FRANK L  
 12536 KOINONIA CHRISTIAN FELLOWSHIP  
 12589 LARA-SITIZ, ANDY  
 12591 OCCUPANT UNKNOWN,  
 12628 KINGS PANTRY  
 OCCUPANT UNKNOWN,  
 12629 THOMAS, RICK R  
 12631 GIBSON, JOE D  
 12633 OCCUPANT UNKNOWN,  
 12642 PREMIERE COLLISION CENTER  
 PRO TOW  
 12645 DUTRA, LEONARD A  
 12659 DUTRA, HENRY J  
 12784 OCCUPANT UNKNOWN,  
 12918 MORGAN & SLATES MANUFACTURING & SUPP  
 12939 AGUILAR, MARCUS A  
 13069 SD ATV SERVICE  
 13180 HANFORD ARMONA SELFSTORAGE  
 13225 PEDDLERS MALL  
 13235 AUTOMOTIVE PERFORMANCE  
 13291 HUFFENBERGER RESTORATIONS  
 13321 HANFORD TOWING SERVICE  
 13331 OCCUPANT UNKNOWN,  
 13405 MACIEL, JIM K

**HANFORD ARMONA RD 2014 (Cont'd)**

13488 LARSON, RICK L  
13508 FIVE STAR MINI STORAGE  
HERITAGE STORAGE  
13520 OCCUPANT UNKNOWN,  
13529 SILVEIR, JOE M  
SILVEIRAS AIR CONDITIONING & HEATIN  
13539 YATTY, MICHAEL M  
13549 KINGS COMMUNITY ACTION ORGANIZATION  
13572 OCCUPANT UNKNOWN,  
13594 MITCHELL, GARY E  
MITCHELLS AIR CONDITIONING & HEATIN  
13704 COLLINS AIR  
G M T GAMES  
WINDTAMER TARPS  
13706 VITZ, JULIET  
13708 WESTSCAPES  
13781 DANIELSON, WIL R  
13784 FRANKS ARMONA AUTO BODY  
13840 RAZO, ROGELIO  
14514 LABANDEIRA, JOHNNY R  
14552 OCCUPANT UNKNOWN,  
14570 MANCILLA, DAVID  
14650 ALEXANDER, LORETTA  
14670 KINGS COUNTY AIR CONDITIONING INC  
14724 CENTRAL VALLEY ROD & RESTORATIONS  
14992 MARVIN, LINDA



**HANFORD ARMONA RD 2010**

|      |                                |
|------|--------------------------------|
| 1115 | NATALL, ANGELO                 |
| 1365 | HELM, JERRY E                  |
| 1433 | VANDERGRAAF, ALBERT A          |
| 2243 | OCCUPANT UNKNOWN,              |
| 2511 | OCCUPANT UNKNOWN,              |
| 2911 | CASTRO, VERONICA               |
| 6160 | HOOPER, ROBERT J               |
| 6236 | LEAL, DANNY J                  |
| 6255 | PAYAN, M J                     |
| 6380 | IRBY, EARL B                   |
| 6431 | TOSTE, MANUEL B                |
| 6433 | BRAVO, RAMIREZ J               |
| 6509 | COELHO, TELMO                  |
| 6624 | BORGES, CARLOS A               |
| 6672 | CORREIA, JOHN M                |
| 6713 | TORRES, ADRIANA                |
| 6714 | DIAS, CHERYL L                 |
| 6749 | D C ELECTRIC                   |
|      | OCCUPANT UNKNOWN,              |
| 6750 | DUTRA, EDDIE S                 |
| 6780 | TOLAN, C                       |
| 6812 | ELLIS, JOHN C                  |
| 6850 | MEYER, FRANK F                 |
| 6894 | GARZA, IGNACIO G               |
| 6976 | TAMEZ, RICARDO R               |
| 7140 | CORONADO, JESUS                |
| 7184 | COX, WALLACE G                 |
| 7216 | CORONADO, ELUTERIO V           |
| 7252 | VICTORIA, FLORITA              |
| 7257 | ASAP PLUMBING                  |
|      | SOSA, ESTELA C                 |
| 7441 | WHITE, JAMES M                 |
| 7479 | OCCUPANT UNKNOWN,              |
| 7480 | BAKER COMMODITIES INC          |
|      | FLETCHER, DOUGLAS D            |
| 7761 | SOUTH VALLEY MATERIALS INC     |
|      | VALLEY READY MIX               |
| 7803 | KINGS WASTE & RECYCLING AUTH   |
| 7818 | PEREIRRA, JOSEPH B             |
| 8076 | OCCUPANT UNKNOWN,              |
| 8211 | DANELL, DAVID M                |
| 8263 | DANELL, CLAIRE L               |
| 8265 | DANELL BROTHERS CUSTOM CHOPPNG |
| 8395 | TEIXEIRA, MARIA J              |
| 8471 | OCCUPANT UNKNOWN,              |
| 8945 | LAKEVIEW GOLF COURSE           |
| 9102 | CLEMENT, ELNORA E              |
| 9144 | BORBOLLA, RALPH R              |
| 9184 | PRIETO, HAROLD D               |
| 9248 | MAGNIA, GUADALUPE C            |

# **HANFORD ARMONA RD 2010 (Cont'd)**

|       |                               |
|-------|-------------------------------|
| 9513  | DURAN, GREGORY V              |
| 9539  | LOPEZ, CARLOS                 |
| 9615  | OREGEL, SANDRA                |
| 9617  | DUTRA, TONY                   |
| 9619  | GUTIERREZ, JESUS E            |
| 9839  | RNR WELDING                   |
| 9842  | OCCUPANT UNKNOWN,             |
| 9845  | CENTRAL VALLEY COOP           |
|       | INTERNATIONAL FIBER PACKAGING |
| 10355 | IMMACULATE HEART OF MARY CHR  |
| 10435 | IMMACULATE HEART SCHLRELIGION |
|       | OCCUPANT UNKNOWN,             |
| 10519 | OCCUPANT UNKNOWN,             |
| 10531 | COELHO, DIMAS                 |
| 10556 | BURKETT, SANDRA L             |
| 10569 | CERON, LINDA                  |
| 10595 | DELACRUZ, KIRK                |
| 10623 | HINOJOSA, VALERIE             |
| 10628 | WHARRY, WILLIAN               |
| 10630 | CLEVAND, NICOLE               |
| 10632 | OCCUPANT UNKNOWN,             |
| 10636 | MITCHELL, DEANNA M            |
| 10815 | K & D LIQUOR FOOD & GAS       |
| 10833 | DOLEX DOLLAR EXPRESS          |
|       | JOYERIA FB                    |
|       | RN MARKET                     |
| 10862 | LEON, HILARIO                 |
| 10864 | GUECHO, RONALD R              |
| 10870 | DENISON, SHERYL               |
| 10872 | DENISON, JIMMY L              |
| 10874 | DIETRICH, WILLIAM E           |
|       | DIETRISH, VERA                |
| 10876 | HOANEY, EUNIA                 |
| 10878 | SHEPHERD, RONALD L            |
| 10882 | LICON, DIXIE L                |
| 10884 | DIVINE, REECE D               |
| 10886 | MALDONADO, MARIA T            |
| 10888 | ABLES, SHIRLEY                |
| 10890 | CIBRIAN, GUADALUPE            |
|       | LYNCH, LARRY G                |
| 10892 | OLIVEIRA, GEORGE L            |
| 10894 | OCCUPANT UNKNOWN,             |
| 10896 | OCCUPANT UNKNOWN,             |
| 10898 | AMARAL, JOSE P                |
| 10900 | HERNANDEZ, ELSA               |
| 10902 | LIMA, MAYRA                   |
| 10904 | ASBILL, JAMES                 |
| 10906 | BETTENCOURT, LEONARD M        |
| 10910 | ALVES, JAN M                  |
| 10912 | RAY, KATHY K                  |

# HANFORD ARMONA RD 2010 (Cont'd)

10914 ROBINSON, JOHNNY G  
10915 STOP ZONE  
10916 CAJERO, NORMA  
10918 WARMERDAM, CHERYL L  
10922 BINDER, ALLEN  
10924 WILLIAMS, JACKIE  
10926 VALENTINE, WILFRED C  
10930 DENISON, S  
10932 BOYCE, MARTHA L  
10934 HARDIN, GUY G  
10936 CAJERO, MARIA L  
10937 JAURIGUI, LEROY P  
10940 EVERSOLE, CHARLES D  
10942 OCCUPANT UNKNOWN,  
10946 MCHANEY, BILLY J  
10950 BARRERA, DENNY J  
LUGO, HILARIO  
10952 OCCUPANT UNKNOWN,  
10954 BELAIR MOBILE HOME PARK  
GRIFFITH, LEROY L  
10958 CRANFORD, MARALYN J  
10962 BRIGHT, JAMES  
10964 HOLLAND, EDWARD  
10968 KINSER, DENISE L  
10970 BERRY, SARAH  
10972 OCCUPANT UNKNOWN,  
10974 OCCUPANT UNKNOWN,  
10976 OCCUPANT UNKNOWN,  
10978 OCCUPANT UNKNOWN,  
10982 STARLINE, MELISSA M  
10984 CORONADO, ALEX  
10986 OCCUPANT UNKNOWN,  
10988 STANLEY, FRANCES A  
10992 ABLES, SHIRLEY  
10994 EAST, JOHN  
10998 STROUP, CLARENCE C  
11122 RUIZ, CANDACE  
11124 DUONG, PHUONG V  
11126 BLAZQUEZ, VENANCIO  
11130 FERNANDEZ, EFREN  
11132 SOLARIO, PAULINE H  
11134 OCCUPANT UNKNOWN,  
11136 ALNAGAR, G  
11151 HARP, KENNETH A  
11212 CORDEIRO, MARIO D  
11303 MANITAS DE AMOR CHILDCARE  
OCCUPANT UNKNOWN,  
11356 HAAS, WALTER G  
11386 MINCHUE, DICKIE L  
11400 DELACRUZ, DAVID L

## HANFORD ARMONA RD 2010 (Cont'd)

11402 MACEDO, WILLIAM E  
 11454 LONG, GALEN L  
 11464 OCCUPANT UNKNOWN,  
 11474 TREADWELL, IRENE  
 11526 OCCUPANT UNKNOWN,  
 11540 SIGALA, FRANCISCO  
 11580 MARTINEZ, PAULINE  
 12150 MARTINEZ, ALBERT F  
 12168 KENNEDY, JERRY A  
 12184 CASA DEL SOL  
 12186 ESPINOZA, YESENIA  
 FLORES, A F  
 FRANCO, ELIZABETH H  
 FULLER, JODI L  
 GARCIA, GENESIS  
 HOLMES, CHARLOTTE L  
 MORAN, LUIS D  
 NORAT, NIVIA N  
 THOMAS, JANINE E  
 12188 AGREDANO, ANESSA M  
 GUADRON, FRANCISCO E  
 JARAMILLO, DORA  
 PATINO, ROSARIO  
 QUINONES, EUGENI  
 TAMAYO, VIRGINIA  
 12190 JOHNSON, MARILYN L  
 QUINONES, SERGIO G  
 12192 DELACRUZ, MIKE  
 GARCIA, VIRGINIA  
 RANGEL, JOSE N  
 WELSH, BETTY  
 12194 BOJORQUEZ, NORMA  
 CAMACHO, ARMANDO  
 CORONA, ANGELA  
 HEBERT, AMBER  
 HINES, HEATHER  
 12196 MENDEZ, JOSE  
 NUNES, LU A  
 PETERSON, RICK  
 12198 BIBEE, DENNIS  
 BURCIAGA, ALENE R  
 FINNELL, MELODY  
 MEDINA, FELICIANO  
 NUNO, MARIA  
 RODRIGUEZ, JOSE  
 WOODS, BRANDI  
 YBARRA, ELIZABETH  
 12200 ROSSEL, ROSALINDA  
 URRUTIA, MANUEL V  
 12202 FERNANDEZ, R

# **HANFORD ARMONA RD 2010 (Cont'd)**

|       |                                |
|-------|--------------------------------|
| 12202 | RAMIREZ, MARIA                 |
|       | VALE, GILBERT                  |
|       | VARGAS, EDUARDO                |
|       | WILKINSON, JENNIFER            |
| 12204 | AZURDIA, GEORGINA              |
|       | BENITEZ, VERONICA              |
|       | FLORES, ALEX                   |
|       | MARTINEZ, MARIA                |
|       | MCCULLUM, CHRISTINE            |
|       | MEDEIRO, ELIZABETH             |
|       | MOZ, PAULINE D                 |
|       | PEREZ, RACHEL                  |
|       | RODRIGUEZ, NORMA               |
|       | SANCHEZ, ELVIRA                |
|       | SKINNER, SHAMYRA               |
| 12206 | ALLEN, DUSTIN                  |
|       | BAIZE, SHANEEQUA               |
|       | GONZALES, ADRIAN               |
|       | GONZALEZ, LILIANA              |
|       | KING, RACHEL W                 |
|       | MORENO, GLORIA                 |
|       | MORENO, YESENIA                |
|       | NEVAREZ, CRYSTAL               |
|       | VALDEZ, RAMIRO                 |
| 12208 | GONZALES, LORINDA              |
|       | GUILLEN, LISA                  |
|       | PIZANO, LUZ M                  |
|       | RAMOS, ANA M                   |
|       | VALLEJO, MELISSA               |
| 12246 | OCCUPANT UNKNOWN,              |
| 12358 | OCCUPANT UNKNOWN,              |
| 12406 | WINTERBERG, WILLIAM L          |
| 12458 | SILKWOOD, RANDY C              |
| 12589 | LARA-SITIZ, ANDY               |
| 12591 | WILLIAMS, RICK B               |
| 12628 | OCCUPANT UNKNOWN,              |
| 12631 | GIBSON, JOE D                  |
| 12633 | OCCUPANT UNKNOWN,              |
| 12642 | PREMIERE COLLISION CTR         |
| 12645 | DUTRA, LEONARD A               |
| 12659 | DUTRA, HENRY J                 |
| 12782 | OCCUPANT UNKNOWN,              |
| 12784 | OCCUPANT UNKNOWN,              |
| 12918 | MORGAN & SLATES MFG & SUPPLIES |
| 12939 | AGUILAR, JOSE A                |
| 13180 | HANFORD ARMONA SELF STORAGE    |
| 13218 | HANFORD TOWING                 |
| 13235 | AUTOMOTIVE PERFORMANCE         |
| 13261 | CARLOS TRANSMISSION SHOP       |
| 13291 | HUFFENBERGER RESTORATIONS      |

## HANFORD ARMONA RD 2010 (Cont'd)

|       |                               |
|-------|-------------------------------|
| 13291 | M C TRUCK & TRAILER           |
|       | MC TRUCK & TRAILER PARTS      |
| 13321 | HANFORD TOWING SVC            |
| 13331 | OCCUPANT UNKNOWN,             |
| 13375 | QUALITY MACHINERY CTR         |
| 13400 | KROY WEST INC                 |
|       | RAS MARKETING INC             |
|       | THRESHER INDUSTRIES INC       |
| 13405 | MACIEL, JIM K                 |
| 13488 | REED, WILMA                   |
| 13508 | FIVE STAR MINI STORAGE        |
| 13515 | FANN, RUSSELL E               |
| 13520 | COCHRAN, BRYAN                |
| 13529 | SILVEIR, JOE M                |
| 13539 | YATTY, MICHAEL M              |
| 13572 | OCCUPANT UNKNOWN,             |
| 13594 | MITCHELL, SUSAN L             |
| 13704 | ALTA PILLOW FORMS             |
|       | AQUA AZUL                     |
|       | WINDTAMER TARPS               |
| 13706 | VITZ, JULIET                  |
| 13781 | DANIELSON, WIL R              |
| 14514 | LABANDEIRA, JANENE M          |
| 14552 | BIVENS, SAY                   |
| 14570 | MORALES, STEVEN L             |
| 14650 | ALEXANDER, LORETTA            |
| 14670 | KINGS COUNTY AIR CONDITIONING |
| 14724 | CENTRAL VALLEY ROD & RSTRTN   |
| 14992 | MARVIN, RICHARD E             |

## HANFORD ARMONA RD 2005

|      |                                     |
|------|-------------------------------------|
| 1365 | STUHAAN, EVERETT C                  |
| 1433 | VANDERGRAAF, ALBERT A               |
| 2243 | VEIGA, MANUEL C                     |
| 2511 | BETTENCOURT, GIL M                  |
| 2911 | JUAREZ, JOSE                        |
| 6025 | OCCUPANT UNKNOWN,                   |
| 6160 | HOOPER, ROBERT J                    |
| 6236 | LEAL, DANNY J                       |
| 6255 | NAVARRO, MICHELLE                   |
| 6380 | IRBY, EARL B                        |
| 6431 | MANUEL TOSTE                        |
|      | MORENO, CARMEN C                    |
|      | TOSTE, MANUEL B                     |
| 6433 | BRAVO, RAMIREZ J                    |
| 6435 | OCCUPANT UNKNOWN,                   |
| 6509 | OCCUPANT UNKNOWN,                   |
| 6624 | BORGES, CARLOS A                    |
| 6672 | OCCUPANT UNKNOWN,                   |
| 6713 | GARCIA, ELIAS                       |
| 6714 | DUTRA, EDDIE S                      |
| 6749 | CLACHER, ROBERT                     |
|      | D C ELECTRIC                        |
| 6750 | DUTRA, JOAQUIN J                    |
| 6780 | TOLAN, C                            |
| 6812 | ELLIS, JOHN C                       |
| 6850 | MEYER, FRANK F                      |
| 6894 | GARZA, IGNACIO G                    |
| 6976 | TAMEZ, RICARDO R                    |
| 7140 | LEWIS, JAMES R                      |
| 7184 | COX, MARY J                         |
| 7216 | CORONADO, ANTONIO G                 |
| 7218 | COMMERCIAL GROUND MAINTENANCE       |
| 7252 | ALCARAZ, JOSE                       |
| 7257 | ASAP PLUMBING                       |
|      | SOSA, RAMIRO R                      |
| 7441 | NAVARRO, MICHELLE                   |
| 7479 | BETTENCOURT, ROWENA J               |
| 7480 | BAKER COMMODITIES INC               |
|      | FLETCHER, DOUGLAS D                 |
| 7721 | SOUTH VALLEY MATERIALS              |
| 7761 | SOUTH VALLEY HEIDELBER CEMENT GROUP |
|      | SOUTH VALLEY MATERIALS              |
|      | VALLEY READY MIX OF TULARE          |
| 7803 | KINGS WASTE & RECYCLING AUTHORITY   |
|      | RECYCLING HOT LINE                  |
| 7818 | PEREIRRA, JOSEPH B                  |
| 8038 | OCCUPANT UNKNOWN,                   |
| 8211 | DANELL, DAVID M                     |
| 8265 | DANELL BROTHERS INC CA              |
| 8395 | TEIXEIRA, MARIA J                   |

# **HANFORD ARMONA RD 2005 (Cont'd)**

|       |                                 |
|-------|---------------------------------|
| 8471  | MID VALLEY ENTERPRISES          |
|       | PEREZ, ALEXANDER M              |
| 8945  | ART OF DECOR                    |
|       | LAKESIDE GOLF PARK              |
| 9102  | CLEMENT, ELNORA                 |
| 9144  | BORBOLLA, RALPH R               |
| 9184  | PRIETO, HAROLD D                |
| 9248  | MAGNIA, GUADALUPE C             |
| 9491  | OCCUPANT UNKNOWN,               |
| 9513  | DURAN, GREGORY V                |
| 9539  | LOPEZ, CARLOS                   |
| 9615  | OCCUPANT UNKNOWN,               |
| 9619  | GUTIERREZ, JESUS E              |
| 9842  | OCCUPANT UNKNOWN,               |
| 9845  | CENTRAL VALLEY COOP             |
| 10355 | IMMACULATE HEART OF MARY CHURCH |
| 10443 | GUERRA, JOSE I                  |
| 10519 | OCCUPANT UNKNOWN,               |
| 10531 | BASS, ANTHONY                   |
| 10556 | BURKETT, SANDRA                 |
| 10569 | RODRIGUEZ, TONY                 |
| 10595 | OCCUPANT UNKNOWN,               |
| 10628 | WHARRY, WILLIAN                 |
| 10630 | CLEVAND, NICOLE                 |
| 10632 | OCCUPANT UNKNOWN,               |
| 10634 | NELSON, VIRGINIA                |
| 10636 | MITCHELL, DEANNA M              |
| 10700 | JACOB STERN & SONS INC          |
| 10833 | JOYERIA YURANI                  |
|       | R N MARKET                      |
| 10862 | LEON, HILARIO                   |
| 10864 | GUECHO, RONALD J                |
| 10866 | GONZALEZ, JOSE D                |
| 10868 | BURRIS, MIKE                    |
| 10870 | SANFORD, LEN L                  |
| 10872 | POTTS, RONALD                   |
| 10874 | DIETRICH, WILLIAM E             |
| 10876 | DUDLEY, WILLARD J               |
| 10882 | LICON, DIXIE L                  |
| 10886 | BROCHU, WANDA L                 |
| 10888 | NELSON, JAMES I                 |
| 10890 | BOYCE, MARTHA                   |
|       | LYNCH, LARRY G                  |
| 10892 | OLIVEIRA, GEORGE L              |
| 10894 | OCCUPANT UNKNOWN,               |
| 10896 | BARAJAS, JOSE                   |
| 10898 | GARCIA, JUAN                    |
|       | HINTON, LEON B                  |
| 10900 | GARCIA, BENJAMIN C              |
| 10902 | OCCUPANT UNKNOWN,               |



# **HANFORD ARMONA RD 2005 (Cont'd)**

10904 ASBILL, JAMES  
 10906 BETTENCOURT, LEONARD M  
 10910 ALVES, JAN M  
 10914 ROBINSON, JOHNNY G  
 10916 PICENO, MIGUEL  
 10918 LONG, KENNETH L  
 10920 WILLIAMS, RUBY J  
 10922 BINDER, ALLEN  
 DENISON, MARGARET L  
 STURGEON, PAMELA J  
 10926 VALENTINE, WILFRED C  
 10928 GARCIA, DORAIMELDA E  
 10930 ADAMS, TINA M  
 10932 BOYCE, MARTHA L  
 10934 HARDIN, GUY  
 10936 HUDSON, ART C  
 10937 JAURIGUI, LUPE A  
 10940 EVERSOLE, CHARLES D  
 10942 OCCUPANT UNKNOWN,  
 10946 MCHANEY, BILLY F  
 10950 MILAM, HAZEL E  
 10952 OCCUPANT UNKNOWN,  
 10954 GRIFFITH, LEROY L  
 L & J AUTO AIR CONDITION  
 10956 ABLES, DONALD S  
 10958 CRAWFORD, MARALYN  
 10960 OCCUPANT UNKNOWN,  
 10964 HOLLAND, EDWARD  
 10968 BRIGHT, J  
 10970 ROBERTS, JOHN  
 10972 OCCUPANT UNKNOWN,  
 10974 OCCUPANT UNKNOWN,  
 10976 OCCUPANT UNKNOWN,  
 10982 ETTER, JANICE  
 10984 MADINA, PAUL  
 10986 OCCUPANT UNKNOWN,  
 10988 STANLEY, FRANCES  
 10990 OCCUPANT UNKNOWN,  
 10992 JAMES, GLEN E  
 10994 WALLACE, RICHARD L  
 10998 BELAIR MOBILE HOME PARK  
 DENISON, JIMMY L  
 11120 REYES, JESUS  
 11122 CAMPOS, LETICIA  
 11124 JIMENEZ, FRANCISCO  
 11126 BLAZQUEZ, VENANCIO  
 11130 SANCHEZ, MIGUEL G  
 11132 SOLARIO, PAULINE H  
 11134 CRAFT, STACEY L  
 11151 NATALI, IRENE

## HANFORD ARMONA RD 2005 (Cont'd)

11212 CORDEIRO, MARIO D  
 11274 CALVARY CHRISTIAN CENTER  
 11303 MANITAS DE AMOR CHILDCARE AND DEV CE  
 OCCUPANT UNKNOWN,  
 11356 HAAS, WALTER G  
 11386 MINCHUE, DICKIE L  
 11400 DELACRUZ, DAVID L  
 11402 MACEDO, WILLIAM E  
 11454 LONG, GALEN L  
 11526 CALIFORNIA ROOFING SERVICES  
 VAIDEZ, MICHAEL R  
 11540 OCCUPANT UNKNOWN,  
 12150 MARTINEZ, ALBERT F  
 12168 KENNEDY, JERRY A  
 12182 GONZALEZ, MARY  
 12184 CASA DEL SOL  
 12186 ALEXANDER, DEMETRIA  
 FATH, REIL  
 FORSYTHE, FRANCO  
 FRANCO, E  
 GONSALVES, AMY  
 HUSTON, MEKA  
 SMITH, BRIA  
 THOMAS, JANINE E  
 VILLALOBOS, MISTY M  
 WOODS, MICHELLE D  
 12188 FRAUSTO, ANESSA M  
 FURCH, HOWARD J  
 GUADRON, FRANCISCO  
 JOHNSON, ERIC  
 LEVEQUE, MARTINA  
 MOON, VIRGINIA  
 NUNES, LUANN  
 QUINONES, EUGENIA  
 RAMIREZ, GUADALUPE  
 12190 ELLIS, ROBIN  
 JOHNSON, ERNEST  
 JOHNSON, MARILYN L  
 QUINONES, SERGIO G  
 SAIS, YOLANDA  
 SMITH, GUADALUPE  
 12192 GARCIA, KAREN  
 JAMES, INGRID  
 LANG, CYNTHIA  
 RODRIGUEZ, NORMA  
 WELSH, BETTY  
 12194 BRIGHT, ANGELA  
 HAYES, MARLENA  
 MCCORMICK, MICHAEL J  
 MOZ, CAYETANA C

# **HANFORD ARMONA RD 2005 (Cont'd)**

|       |                                                                                                                                                                                                                                                                                                            |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12196 | HOUSTON, SHELLY<br>VILLA, ABEL                                                                                                                                                                                                                                                                             |
| 12198 | BURCIAGA, ALENE<br>MACIEL, IGNACIO                                                                                                                                                                                                                                                                         |
| 12200 | BARKER, COREY<br>BOWLES, STEVEN<br>DOUGLAS, DEXTER<br>GRUETZMACHER, A<br>HALL, TAMMY<br>RENTERIA, ANDREW<br>RODRIGUEZ, JUANITA T<br>SKINNER, ISAAC L                                                                                                                                                       |
| 12202 | FERNANDEZ, R<br>QUINONEZ, JUAN<br>SANCHEZ, DELILAH Y<br>VALE, KATHY R                                                                                                                                                                                                                                      |
| 12204 | ALCALA, MARQUEZ A<br>DIAZ, REANNA C<br>GARCIA, AMY<br>LOZA, ANTONIO<br>MACHADO, MELISSA A<br>MARTINEZ, KAREN D<br>MCCULLUM, CHRISTINE<br>MOZ, PAULINE<br>NORAT, NIVIA N<br>SANTIAGO, J C<br>SMIT, CRYSTAL<br>SOLORIO, IRMA<br>TAMAYO, REANNA<br>VALDEZ, FRANCISCA<br>WARREN, TERRY L<br>WRIGHT, RODERICK N |
| 12206 | ALLEN, DUSTIN<br>ALMAREZ, MARIA<br>BIBEE, DENNIS<br>GARCIA, DIANA I<br>GARZA, ROSEMARY<br>JOHNSON, LASHAWN<br>LAURA, C<br>MONROY, CIRILIO<br>SIMPILCIANO, ROBERT R                                                                                                                                         |
| 12208 | BALL, L<br>CASTRO, DENISE<br>DELA, CRUZ C<br>GARCIA, CHRISTINA<br>GARDNER, GARZA<br>GARZA, MIA<br>HORN, DEBRA A<br>HOUSTON, JOHN D<br>LEON, PAULINA                                                                                                                                                        |

## HANFORD ARMONA RD 2005 (Cont'd)

|       |                                     |
|-------|-------------------------------------|
| 12208 | MEDINA, PARICIA                     |
|       | MUNOZ, SHAREL                       |
|       | PAUWELLS, LOPEZ                     |
|       | PIERCE, KARLA                       |
|       | RUBIO, ANA P                        |
| 12246 | OCCUPANT UNKNOWN,                   |
| 12358 | SCHUMACHER, GERALD H                |
| 12406 | WINTERBERG, WILLIAM L               |
| 12458 | MORALES, JOSE                       |
| 12591 | OCCUPANT UNKNOWN,                   |
| 12628 | CARROLL, JAY                        |
| 12629 | THOMAS, DONNA H                     |
| 12631 | GIBSON, JOE D                       |
| 12633 | GONZALES, LOUIE                     |
| 12645 | DUTRA, LEONARD                      |
| 12659 | DUTRA, HENRY J                      |
| 12782 | OCCUPANT UNKNOWN,                   |
| 12784 | COMMERCIAL LANDSCAPE MAINTENANCE    |
|       | COMMERCIAL LANDSCAPE MNTNNC         |
|       | VASQUEZ, HEATHER                    |
| 12939 | OCCUPANT UNKNOWN,                   |
| 13159 | VETERINARY PHARMACEUTICALS INC      |
| 13235 | AUTOMOTIVE PERFORMANCE              |
| 13261 | MAJESTIC MUSIC                      |
| 13291 | HUFFENBERGER RESTORATIONS           |
| 13331 | OCCUPANT UNKNOWN,                   |
| 13375 | QUALITY MACHINERY CENTER            |
|       | TRI COUNTIES EQUIPMENT CO           |
| 13400 | BELTON INDUSTRIES                   |
|       | CENTRAL VALLEY WELDING              |
|       | KROY WEST INC                       |
|       | THRESHER INDUSTRIES LLC             |
| 13405 | MACIEL, JIM K                       |
| 13488 | AMERICAN TRAVELING SHOWS            |
|       | JR SELF STORAGE & RV                |
|       | REED, WILMA                         |
| 13508 | JR SELF STORAGE                     |
| 13515 | FANN, RUSSELL E                     |
| 13520 | COCHRAN, BRYAN                      |
| 13529 | SILVEIR, JOE M                      |
|       | SILVEIRAS & FOUR SEASONS CNTN       |
|       | SILVEIRAS & FOUR SEASONS CONTINUOUS |
| 13539 | YATTY, MICHAEL M                    |
| 13572 | OCCUPANT UNKNOWN,                   |
| 13704 | AQUA AZUL                           |
|       | AUDIO N VISION                      |
|       | CANNERY INDUSTRIAL PARK             |
|       | GMT GAMES                           |
| 13706 | VITZ, JULIET                        |
| 13738 | J & D JOSHUAS TOWING                |

**HANFORD ARMONA RD 2005 (Cont'd)**

13795 KOS, LEWIS  
13824 DENIZ, DAVID M  
13860 RAZO, PEREZ  
13872 HILLMAN, L  
13882 LEMOS, FAYE  
13921 LONG, DEBRA K  
13981 DANIELSON, W R  
13993 DANIELSONS HARDWARE RENTALS SAW & MO  
14514 LABANDEIRA, JANENE M  
14552 BIVENS, RAY R  
14570 MORALES, STEVEN L  
14724 ROD CENTRAL VLY & RESTORATION  
14940 OCCUPANT UNKNOWN,  
14992 OCCUPANT UNKNOWN,

## HANFORD ARMONA RD 2000

|      |                                                              |
|------|--------------------------------------------------------------|
| 1365 | STUHAAN, EVERETT                                             |
| 1433 | OCCUPANT UNKNOWN,                                            |
| 1605 | OCCUPANT UNKNOWN,                                            |
| 1705 | ARTS AUTO DIAGNOSTICS                                        |
| 2243 | OCCUPANT UNKNOWN,                                            |
| 2511 | BETTENCOURT, GIL                                             |
| 6025 | CARDOZA, P                                                   |
| 6160 | CASPARY, SHERRY L                                            |
| 6236 | LEAL, DANNY                                                  |
| 6431 | MILLS, GARY A                                                |
|      | TOSTE, MANUEL B                                              |
| 6433 | OCCUPANT UNKNOWN,                                            |
| 6435 | OCCUPANT UNKNOWN,                                            |
| 6585 | OCCUPANT UNKNOWN,                                            |
| 6624 | BORGES, CARLOS A                                             |
| 6672 | CORREIA, JOHN M                                              |
| 6713 | OCCUPANT UNKNOWN,                                            |
| 6714 | OCCUPANT UNKNOWN,                                            |
| 6749 | CLACHER, DAVID L                                             |
|      | D C ELECTRIC                                                 |
| 6812 | ELLIS, JOHN                                                  |
| 6850 | OCCUPANT UNKNOWN,                                            |
| 6894 | GARZA, IGNACIO                                               |
| 6976 | TAMEZ, RICARDO V                                             |
| 7140 | LEWIS, JAMES                                                 |
| 7184 | COX, MARY J                                                  |
| 7216 | CORONADO, ANTONIO                                            |
| 7252 | OCCUPANT UNKNOWN,                                            |
| 7257 | SOSA, RAMIRO R                                               |
| 7479 | OCCUPANT UNKNOWN,                                            |
| 7480 | BAKER COMMODITIES INCORPORATED KINGS TULARE                  |
|      | KINGS TULARE TALLOW DIVISION OF BAKER COMMODITIES INCORPORAT |
|      | OCCUPANT UNKNOWN,                                            |
| 7761 | SOUTH VALLEY MATERIALS INCORPORATED                          |
| 7803 | KINGS WASTE & RECYCLING AUTHORITY                            |
|      | RECYCLING HOT LINE THE                                       |
| 7818 | PEREIRRA, JOSEPH                                             |
| 8038 | BENEDICT, DUANE W                                            |
| 8076 | WILLIAMS, RAYMOND C                                          |
| 8211 | OCCUPANT UNKNOWN,                                            |
| 8263 | DANELL, CLAIRE L                                             |
| 8265 | DANELL BROTHERS CUSTOM CHOPPING                              |
|      | DANELL, CLAIRE L                                             |
| 8395 | TEIXEIRA, JOSE L                                             |
| 8415 | OCCUPANT UNKNOWN,                                            |
| 8471 | MID VALLEY DIESEL TRUCK & TRAILER REPAIR                     |
|      | PEREZ, A M                                                   |
| 8945 | LAKESIDE GOLF COURSE                                         |
|      | OCCUPANT UNKNOWN,                                            |
| 9102 | OCCUPANT UNKNOWN,                                            |

# **HANFORD ARMONA RD 2000 (Cont'd)**

9144 OCCUPANT UNKNOWN,  
 9184 OCCUPANT UNKNOWN,  
 9248 ARCHULETA, G  
 9365 HODGE, DELLA M  
 9443 OCCUPANT UNKNOWN,  
 9483 KINGS COUNTY ROOFING COMPANY  
 9513 OCCUPANT UNKNOWN,  
 9539 LOPEZ, GUS M  
 9615 OCCUPANT UNKNOWN,  
 9617 OCCUPANT UNKNOWN,  
 9619 MARTINEZ, F  
 9839 RHINO LININGS OF HANFORD HANFORD GOLD PLATING  
 9845 CENTRAL VALLEY COOPERATIVE  
 10355 IMMACULATE HEART OF MARY  
 10531 OCCUPANT UNKNOWN,  
 10556 BURKETT, MYRTLE L  
 10569 OCCUPANT UNKNOWN,  
 10595 MARTINEZ, HOPE  
 10623 DELACRUZ, STEVE  
 10626 OCCUPANT UNKNOWN,  
 10630 OCCUPANT UNKNOWN,  
 10632 OCCUPANT UNKNOWN,  
 10634 CASTANEDA, STELLA  
 10636 OCCUPANT UNKNOWN,  
 10700 SNOW COMMODITIES COMPANY INCORPORATED  
 10833 OCCUPANT UNKNOWN,  
 R N MARKET  
 10862 EDWARDS, ROY  
 10864 MINTER, JASON W  
 10866 OCCUPANT UNKNOWN,  
 10868 OCCUPANT UNKNOWN,  
 10870 MCCORD, DANIEL  
 10872 FREELAND, TERRY D  
 10874 HOWE, GLENDA F  
 10876 DUDLEY, WILLARD  
 10878 OCCUPANT UNKNOWN,  
 10882 OCCUPANT UNKNOWN,  
 10886 MILAM, HAZEL  
 10888 NELSON, JAMES I  
 10892 OLIVEIRA, GEORGE  
 10894 LINDSEY, GUY L  
 10898 WEISSER, MICHAEL  
 10900 SMITH, ROBERT L  
 10904 CHENEY, RICHARD D  
 10906 BETTENCOURT, LEONARD  
 10908 OCCUPANT UNKNOWN,  
 10910 ALVES, LAURA L  
 10914 ROBERTS, D  
 10915 K & D LIQUOR & FOOD  
 10918 OCCUPANT UNKNOWN,

# HANFORD ARMONA RD 2000 (Cont'd)

10920 OCCUPANT UNKNOWN,  
10922 DENISON, M L  
WELLS, LORI  
10924 WILLIAMS, OVAL B  
10926 OCCUPANT UNKNOWN,  
10930 BENNINGFIELD, JOHN H  
10932 BOYCE, MARTHA L  
10934 HARDIN, GUY  
10936 OCCUPANT UNKNOWN,  
10937 JAURIGUI, LEROY P  
10938 OCCUPANT UNKNOWN,  
10942 OCCUPANT UNKNOWN,  
10946 MCHANEY, BILLY F  
10948 RUTHERFORD, M M  
10950 CHRISTENSEN, NADINE  
10952 INGLE, DAVID W  
10954 GRIFFITH, LORY  
10956 MORTON, ALICE L  
10958 KELLER, DONALD G  
10960 STANLEY, FRANCES  
10964 LEAL, VERNON M  
NORTON, LUTHER R  
STOUT, DIANA M  
10966 ADAMS, HAZEL  
10968 SULLIVAN, JUDY E  
10970 TAYLOR, LEANNA  
10974 OCCUPANT UNKNOWN,  
10976 OCCUPANT UNKNOWN,  
10986 GILLAM, PAUL  
10998 BELAIR MOBILE HOME PARK  
11120 OCCUPANT UNKNOWN,  
11122 OCCUPANT UNKNOWN,  
11132 SOLARIO, PAULINE H  
11134 OCCUPANT UNKNOWN,  
11151 NATALI, IRENE  
11212 OCCUPANT UNKNOWN,  
11274 CALVARY CHRISTIAN CENTER  
11303 MARTINEZ, NANCY C  
11306 OCCUPANT UNKNOWN,  
11356 HAAS, WALTER  
11386 OCCUPANT UNKNOWN,  
11400 DELACRUZ, SHEILA  
11402 MACEDO, WILLIAM E  
11454 LONG, GALEN L  
11464 AVALOS, LUIS  
11474 SAIV, LEONEL  
11526 CALIFORNIA ROOFING SERVICES  
12186 HARRIS, MARTIE G  
VILLALOBOS, MISTY M  
12188 VALE, LIZETTE



## HANFORD ARMONA RD 2000 (Cont'd)

|       |                                                              |
|-------|--------------------------------------------------------------|
| 12190 | BANEGAS, CHERYL                                              |
|       | JOHNSON, MARY E                                              |
| 12192 | REIL, FAITH A                                                |
| 12194 | GONZALES, RENEE                                              |
|       | MOZ, C                                                       |
| 12200 | SKINNER, EDITH                                               |
| 12202 | VEIGA, E                                                     |
| 12204 | DESOTO, C                                                    |
|       | GAYTON, D                                                    |
|       | RANGEL, SYLVIA                                               |
|       | ROGERS, REGINA                                               |
| 12206 | BESOUGLOFF, DEANNA                                           |
|       | CARTER, KIMYATA A                                            |
|       | DELATORRE, ALICIA                                            |
|       | DIAZ, C M                                                    |
| 12208 | MARTINEZ, DAMIAN                                             |
| 12358 | SHOEMAKER, GERALD                                            |
| 12406 | WINTERBERG, W L                                              |
| 12458 | DOMINGUEZ, RUBEN                                             |
| 12536 | STRAIN, LOIS                                                 |
| 12589 | BILLINGSLEY, SAMUEL E                                        |
| 12591 | RUFO, BENIGNO O                                              |
| 12628 | ORR, MISTI K                                                 |
| 12629 | OCCUPANT UNKNOWN,                                            |
| 12631 | MITCHELL, HERBERT                                            |
| 12633 | RODRIGUEZ, EULAILO                                           |
| 12645 | DUTRA, HENRY J                                               |
| 12659 | DUTRA, HENRY J                                               |
| 12744 | TIRE CENTERS                                                 |
| 12780 | OCCUPANT UNKNOWN,                                            |
| 12782 | BOWLES, C                                                    |
|       | CHRISTINES FLOWERS                                           |
| 12918 | MORGAN & SLATES MANUFACTURING & SUPPLIES INCORPORATED RTL OU |
| 12939 | PACE, ELDON D                                                |
| 13159 | DESJARDINS HAROLD VETERINARY PHARMACEUTICALS INCORPORATED    |
|       | VETRNRY PHARMACEUTICALS INCORPORATED DRY MEDICINES ONLY      |
| 13265 | AUTOMOTIVE PERFORMANCE                                       |
|       | BROCK & LOVETT CONSTRUCTION                                  |
| 13291 | HUFFENBERGER RESTORATIONS                                    |
| 13375 | MACIEL JOHN TRI COUNTIES EQUIPMENT CO                        |
|       | TRI-COUNTIES EQUIPMENT CO                                    |
| 13400 | ASC TUBING INCORPORATED                                      |
|       | BELTON INDUSTRIES INCORPORATED                               |
|       | KROY WEST INCORPORATED                                       |
| 13405 | MACIEL, JIM                                                  |
| 13520 | COCHRAN, BRYAN                                               |
| 13529 | GONZALEZ, RICK E                                             |
| 13539 | YATTY, MICHAEL M                                             |
| 13594 | MITCHELLS AIR CONDITIONING & HEATING                         |
| 13704 | COLLINS AIR                                                  |

**HANFORD ARMONA RD 2000 (Cont'd)**

13704 G M T GAMES  
13706 BORNEFELD, GROVER  
13710 D & S CUSTOM CABINETS  
13795 KOS, LEWIS  
13818 DONEZ, JUAN  
HERNANDEZ, NORMA P  
13882 OCCUPANT UNKNOWN,  
13921 LUCERO, JESSICA  
13935 OCCUPANT UNKNOWN,  
13963 OCCUPANT UNKNOWN,  
13981 DANIELSON, W R  
14013 ARMONA UNITED METHODIST CHURCH  
14341 ARMONA CENTRAL ASSEMBLY OF GOD  
14514 CAMARA, EDWIN R  
14552 BIVENS, RAY  
14570 MORALES, STEVEN L  
14602 BATES, WOODROW W  
14992 MARVIN, RICHARD L  
15279 KJOP 1240 AM REQUEST LINE

**HANFORD ARMONA RD 1995**

|      |                               |
|------|-------------------------------|
| 1035 | SEVENTH DAY ADVENTIST CHURCH  |
| 1150 | KNEE, FRED M                  |
| 1170 | WATSON, ROGER                 |
| 1365 | STUHAAN, EVERETT              |
| 1433 | VANDER, ALBERT                |
| 1705 | EDS REFRIGERATOR SHOP         |
|      | U HAUL CO                     |
| 2243 | ANDRADA, LOUIS                |
| 2511 | BETTENCOURT, GIL              |
| 5471 | OCCUPANT UNKNOWNNN            |
| 6160 | DAVAL BUILDING MAINTENANCE    |
|      | MATTOS, ALFRED J              |
| 6233 | OCCUPANT UNKNOWNNN            |
| 6236 | LEAL, DANNY                   |
| 6255 | CONDIE, HELEN R               |
| 6431 | TOSTE, MANUEL B               |
| 6433 | FRANCO, MANUEL                |
|      | GALLEGOS, JULIAN              |
| 6435 | LIMA, FRANK P                 |
| 6509 | QUESADO, LINDA                |
| 6585 | NORWOOD, DICK                 |
| 6624 | BORGES, CARLOS A              |
| 6672 | CORREIA, JOHN M               |
| 6714 | BARNETT, DOYLE H              |
| 6749 | D C ELECTRIC                  |
| 6750 | OCCUPANT UNKNOWNNN            |
| 6780 | DELGADILLO, ADALINE           |
| 6812 | ELLIS, JOHN                   |
| 6850 | MEYER, FRANK F                |
| 6894 | GARZA, IGNACIO                |
| 7140 | SUELTER, VIVIAN               |
| 7184 | COX, W F                      |
| 7216 | OCCUPANT UNKNOWNNN            |
| 7479 | BETTENCOURT, JOHN             |
| 7480 | BAKER COMMODITIES INC         |
|      | OCCUPANT UNKNOWNNN            |
| 7761 | CROOKSHANKS READY MIX         |
| 7818 | PEREIRRA, JOSEPH              |
| 7875 | KINGS COUNTY WASTE MANAGEMENT |
|      | MITCHELL BROWN GENERAL ENGRNG |
| 8076 | HEWETT, ROGER                 |
| 8211 | BETTENCOURT, MANUEL A         |
| 8265 | DANELL, BILL                  |
| 8395 | TEIXEIRA, JOE L               |
| 8415 | TEIXEIRA, JOHN                |
| 8471 | ALS DIESEL TRUCK & TRAILER    |
|      | OCCUPANT UNKNOWNNN            |
| 9184 | PRIETO, HAROLD                |
| 9248 | MAGNIA, G                     |
| 9365 | HAIRPORT BARBER SHOP          |

# **HANFORD ARMONA RD 1995 (Cont'd)**

|       |                            |
|-------|----------------------------|
| 9365  | LOPEZ, JOE R               |
| 9443  | SATURNINO, JIMENEZ         |
| 9483  | KINGS COUNTY ROOFING CO    |
| 9513  | DURAN, JOHN A              |
| 9539  | LOPEZ, GUS M               |
| 9615  | SANCHEZ, ROBERT            |
| 9617  | JUAREZ, RIOS J             |
| 9619  | SANCHEZ, EVERARD           |
| 9845  | CENTRAL VALLEY COOPERATIVE |
| 10355 | IMMACULATE HEART OF MARY   |
| 10443 | GUERRA, JOSE I             |
| 10519 | SANCHEZ, JESUS G           |
| 10556 | OCCUPANT UNKNOWNNN         |
| 10569 | VIZCARRA, JULIO            |
| 10595 | OCCUPANT UNKNOWNNN         |
| 10623 | DELA, STEVE                |
| 10626 | CERVANTES, JESUS           |
| 10632 | HERNANDEZ, R               |
| 10833 | R N MARKET                 |
| 10862 | EDWARDS, ROY               |
| 10864 | OCCUPANT UNKNOWNNN         |
| 10868 | OCCUPANT UNKNOWNNN         |
| 10870 | OCCUPANT UNKNOWNNN         |
| 10876 | DUDLEY, WILLARD            |
|       | HOANEY, EUNIA              |
| 10878 | RITCHIE, BERNERD           |
| 10882 | LICON, DIXIE               |
| 10886 | KLIEVER, HERB              |
| 10890 | SALINAS, TINA              |
| 10894 | MASSEY, ELAINE M           |
| 10900 | SMITH, ROBERT L            |
| 10902 | STAGGS, JOHN               |
| 10904 | ANDERSON, ALMA H           |
| 10906 | BETTENCOURT, LEONARD       |
| 10908 | AERNI, DALE                |
| 10914 | ROBERTS, DOROTHE           |
| 10915 | K & D LIQUOR & FOOD        |
| 10918 | OCCUPANT UNKNOWNNN         |
| 10920 | SHAVER, HUGH C             |
| 10924 | WILLIAMS, OVAL B           |
| 10930 | BENNINGFIELD, JOHN H       |
| 10932 | HILL, BOYD                 |
| 10934 | HARDIN, GUY                |
| 10937 | JAUREQUI, GONZALE C        |
| 10938 | OCCUPANT UNKNOWNNN         |
| 10940 | EVERSOLE, CHARLES          |
| 10942 | OCCUPANT UNKNOWNNN         |
| 10946 | MCHANEY, BILL F            |
| 10948 | RUTHERFORD, HOMER          |
| 10950 | OCCUPANT UNKNOWNNN         |

# **HANFORD ARMONA RD 1995 (Cont'd)**

10952 OCCUPANT UNKNOWNN  
 10954 OCCUPANT UNKNOWNN  
 10956 MORTON, STANLEY  
 10958 KELLER, DONALD G  
 10960 BURGESS, JAMES  
 10968 OCCUPANT UNKNOWNN  
 10974 OCCUPANT UNKNOWNN  
 10976 HUTSELL, IVEL O  
 10986 OCCUPANT UNKNOWNN  
 10988 OCCUPANT UNKNOWNN  
 10994 OCCUPANT UNKNOWNN  
 10996 MASSEY, JOE JR  
 10998 BELAIR MOBILE HOME PARK  
 11122 SILVA, RENE  
 11124 OCCUPANT UNKNOWNN  
 11130 OCCUPANT UNKNOWNN  
 11132 OCCUPANT UNKNOWNN  
 11134 OCCUPANT UNKNOWNN  
 11136 SANDERSON, H M  
 11151 NATALI, ANGELO  
 11274 CALVARY CHRISTIAN CTR  
 11306 OCCUPANT UNKNOWNN  
 11356 OCCUPANT UNKNOWNN  
 11402 MACEDO, WILLIAM E  
 11464 AVALOS, LOUIS  
 11474 TORRES, JESUS  
 12246 DOMINGUEZ, RUBEN  
 12358 SCHUMACHER, GERALD  
 SHOEMAKER, GERALD  
 12406 WINTERBERG, W L  
 12458 FLOODMAN, JOHN A  
 12589 BILLINGSLEY, SAMUEL E  
 12628 BARLOW, MARK  
 12631 MITCHELL, HERBERT  
 12633 RODRIGUEZ, EULALIO  
 12918 LEROY MORGAN  
 12939 AVILA, ROSEMARY  
 13035 OCCUPANT UNKNOWNN  
 13101 OCCUPANT UNKNOWNN  
 13159 DESJARDINS, SHANE  
 VET PHARMACEUTICALS INC  
 13291 DAVES UPHOLSTERY  
 13375 TRI COUNTIES EQUIPMENT CO  
 13400 ASC TUBING INC  
 RAYS APPAREL  
 13405 MACIEL, JIM  
 13520 COCHRAN, BRYAN  
 13529 GONZALEZ, RICK E  
 13704 DAWSON WOODWORKS  
 DAWSON, WOODWOR

**HANFORD ARMONA RD 1995 (Cont'd)**

|       |                               |
|-------|-------------------------------|
| 13795 | KOS, LEWIS                    |
| 13963 | OCCUPANT UNKNOWNN             |
| 13981 | DANIELSON, W R                |
| 14514 | ANTHONY'S CARPET & UPHOLSTERY |
| 14700 | LEMOORE BODY WORKS            |

**HANFORD ARMONA RD 1992**

|       |                     |
|-------|---------------------|
| 1150  | KNEE, FRED M        |
| 1170  | WATSON, ROGER       |
| 1433  | VANDERGRAAF, ALBERT |
| 2243  | ANDRADA, LOUIS      |
| 2511  | BETTENCOURT, GIL    |
| 6160  | DAVAL BUILDING MNTC |
|       | MATTOS, ALFRED J    |
| 6431  | TOSTE, MANUEL B     |
| 6435  | LIMA, FRANK P       |
| 6585  | NORWOOD, DICK       |
| 6624  | BORGES, CARLOS A    |
| 6672  | CORREIA, JOHN M     |
| 6714  | BARNETT, DOYLE H    |
| 6749  | D C ELECTRIC        |
| 6812  | ELLIS, JOHN         |
| 6850  | MEYER, FRANK F      |
| 7184  | COX, W F            |
| 7479  | BETTENCOURT, JOHN   |
| 7480  | BAKER COMDTYS KINGS |
|       | KINGS TULARE TALLOW |
| 7761  | CROOKSHANKS RDY MIX |
| 7818  | PEREIRRA, JOSEPH    |
| 7875  | BROWN M GENL ENGRG  |
|       | KINGS CO SOLID WST  |
| 8076  | HEWIETT, ROGER      |
| 8265  | DANELL BROS CHOPPNG |
|       | DANELL, BILL        |
| 8395  | TEIXEIRA, JOE L     |
| 8471  | ALS DIESEL TRCK RPR |
| 9184  | PRIETO, HAROLD      |
| 9365  | HAIRPORT BARBER SHP |
|       | LOPEZ, JOE R        |
| 9443  | JIMENEZ ROSA RADIO  |
|       | SATURNINO, JIMENEZ  |
| 9483  | KINGS CO IRRIGATION |
| 9513  | DURAN, JOHN A       |
| 9539  | LOPEZ, GUS M        |
| 9615  | SANCHEZ, ROBERT     |
| 9619  | JUAREZ, BULMARO     |
| 9839  | T&G TRUCKING        |
|       | VERNONS TRUCK RPR   |
| 9845  | CENTRL VLY COOPERTV |
| 9865  | ARTISTIC VISIONS    |
| 10355 | IMMACULT HEART MARY |
| 10443 | GUERRA, JOSE I      |
| 10519 | SANCHEZ, JESUS G    |
| 10569 | VIZCARRA, JULIO     |
| 10595 | VARGAS, MARIA       |
| 10623 | DELACRUZ, STEVE     |
| 10700 | SNOW COMMODITIES CO |

# HANFORD ARMONA RD 1992 (Cont'd)

10833 R N MARKET  
10862 EDWARDS, ROY  
10864 STONE, HARLIN  
10868 WILLETT, ARMAND J  
10870 SNOWDER, L J  
10876 DUDLEY, WILLARD  
HOANEY, EUNIA  
10878 RITCHIE, BERNERD  
10882 LICON, DIXIE  
10886 KLIEVER, HERB  
10894 MASSEY, ELAINE M  
10900 HUDSON, MYRTIE M  
10902 JOHNSON, ROYAL A  
10906 BETTENCOURT, LEONARD  
10908 ARNOLD, DIRK  
10914 ROBERTS, D  
10915 R&D LIQUOR&FOOD  
10916 TINDELL, JOE  
10918 SILVA, TONY R  
10922 DENISON, AMBUS  
10924 WILLIAMS, OVAL B  
10930 KIRBY, O  
10932 HILL, BOYD  
10934 HARDIN, GUY  
10942 HANDLEY, J B  
10948 RUTHERFORD, HOMER  
10968 PHILLIPS, LALA  
10976 HUTSELL, IVEL O  
10982 TANNER, EMORY  
10996 THORNSBERRY, CLARK  
10998 BELAIR MOBILE HM PK  
11132 WONG, KWONG H  
11151 NATALI, ANGELO  
11274 CALVARY CHRSTN CNTR  
11356 HAAS, WALTER  
11402 MACEDO, WILLIAM E  
11464 AVALOS, LOUIS  
11474 TORRES, JESUS  
11540 PURDY, NEAL  
12246 DOMINGUEZ, RUBEN  
12358 SHOEMAKER, GERALD  
12406 SILKWOOD, FRANK  
WINTERBERG, W L  
12458 FLOODMAN, JOHN A  
12589 BILLINGSLEY, SAMUEL E  
12631 MITCHELL, HERBERT  
12633 RODRIGUEZ, EULALIO  
SUICIDE MTRCYCL RPR  
12778 VERBURG BROTHERS  
13101 VANDERLAS, H R



**HANFORD ARMONA RD 1992 (Cont'd)**

|       |                                                          |
|-------|----------------------------------------------------------|
| 13159 | DESJARDINS HAROLD<br>DESJARDINS, HAROLD                  |
| 13331 | LEMOORE CHRSTN CNTR                                      |
| 13375 | TRI COUNTIES EQUIP                                       |
| 13400 | A S C TUBING INC<br>BELTON INDUSTRY INC<br>PRIVATE LABEL |
| 13405 | MACIEL, JIM                                              |
| 13520 | COCHRAN, BRYAN                                           |
| 13529 | GONZALEZ, RICK E                                         |
| 13576 | RAMOS, DANNY                                             |
| 13704 | DAWSON WOODWORKS                                         |
| 13712 | AG COVERS INC                                            |
| 13914 | SOUTH VLY AMBULANCE                                      |
| 13963 | ADAMS, GEORGE H                                          |
| 13981 | DANIELSON, W R                                           |
| 13993 | DANIELSONS HARDWARE                                      |
| 14041 | ARMONA UN METHODIST                                      |
| 14118 | COMBS, ALLEN                                             |
| 14223 | BARBOZ, M                                                |
| 14341 | ARMONA ASSEMBLY GOD                                      |
| 14352 | DIBBLE, DOUGLAS D                                        |
| 14552 | SANSOM, HAROLD                                           |
| 14700 | LEMOORE BODY WORKS                                       |
| 14724 | HOUSE OF PLANTS                                          |
| 14992 | MARVIN, RICHARD L                                        |

## HANFORD ARMONA RD 1990

HANFORD ARMONA RD  
93230 HANFORD

|      |                       |          |    |
|------|-----------------------|----------|----|
| 1433 | VANDERGRAAF Albert    | 584-8344 |    |
| 1706 | *ROSG J B SERVICE     | 584-6818 | 8  |
| 2243 | ANORADA Louis         | 582-7482 |    |
| 2511 | BETTENCOURT Gil       | 582-6882 |    |
| 6025 | XXXX                  | 00       |    |
| 5160 | MATTOS Alfred J       | 582-9675 |    |
|      | MATTOS Mary           | 582-9675 |    |
| 6233 | XXXX                  | 00       |    |
| 6255 | MORAN Chris           | 584-3415 | +D |
| 6360 | XXXX                  | 00       |    |
| 6431 | TOSTE Manuel B        | 583-1983 | 8  |
| 6433 | XXXX                  | 00       |    |
| 6435 | LIMA Frank P          | 584-6535 | 8  |
| 6500 | DIAS R G              | 584-1018 | 9  |
| 6585 | NORWOOD Dick          | 582-5854 |    |
| 6624 | BORGES Carlos A       | 582-0520 | 3  |
| 6672 | CORREIA John M        | 582-5820 |    |
| 6714 | BARNETT Doyle H       | 582-8839 |    |
| 6749 | *D C ELECTRIC         | 584-6484 | +D |
| 6800 | XXXX                  | 00       |    |
| 5812 | ELLIS John            | 582-3318 |    |
| 8850 | MEYER Frank F         | 582-8758 |    |
| 6894 | GARZA Ignacio         | 582-2674 |    |
| 7140 | WEAVER Michael V      | 582-2477 | 3  |
| 7184 | COX W F               | 582-4784 |    |
| 7252 | BULL Hog              | 582-8224 | +D |
| 7257 | XXXX                  | 00       |    |
| 7479 | BETTENCOURT John      | 584-5914 |    |
| 7488 | *SAKER COMOTYS KINOS  | 582-0271 | 7  |
|      | *KINOS TULARE TALLOW  | 688-4797 | 7  |
| 7868 | XXXX                  | 00       |    |
| 7761 | XXXX                  | 00       |    |
| 7818 | PEREIRA Joseph        | 582-4586 |    |
| 7875 | *BROWN M GENL ENGRO   | 582-57D1 | +D |
|      | *KINGS CO SOLID WST   | 582-4850 |    |
| 8038 | XXXX                  | 00       |    |
| 8076 | HEWETT Diane          | 584-3778 |    |
|      | HEWETT Roger          | 584-3778 |    |
| 8265 | DANELL Bill           | 582-5180 | 8  |
|      | *DANELL BROS CHOPPING | 582-1251 | 7  |

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# **HANFORD ARMONA RD 1990**

|                            |             |
|----------------------------|-------------|
| HANFORD ARMONA RD          | 93230 CONT  |
| 8355 XXXX                  | 00          |
| 8471 *ALS DIESEL TRCK RPR  | 564-7859 +0 |
| PEREZ Alex                 | 594-5005 +0 |
| 9144 BORBOLLA Jos          | 582-7258 7  |
| 9248 XXXX                  | 00          |
| 9385 *HAIRPORT BARBER SHP  | 582-9717 8  |
| LOPEZ Joe R                | 582-9796    |
| 9443 *JIMENEZ ROSA RADIO   | 582-2048 3  |
| SATURNINO Jimenez          | 582-2048 3  |
| 9483 *KINGS CO IRRIGATION  | 583-7426 8  |
| *KINGS CO ROOFING CO       | 582-2250 2  |
| *KINGS CO ROOFING CO       | 582-8759 3  |
| *TAYLOR AIR SYSTEMS        | 582-5878 4  |
| *VALLE AUTO BOY RPR        | 583-1250 7  |
| 9491 XXXX                  | 00          |
| 9513 DURAN John A          | 582-0755    |
| 9539 LOPEZ Gus M           | 582-5306    |
| 9615 SANCHEZ Robert        | 583-8580 +0 |
| 9619 RIOS Olivia           | 583-5914 9  |
| 9839 *BETTENCOURT M TRCKG  | 582-0167 4  |
| 9845 *CENTRL VLY COOPERTY  | 582-0321    |
| 9865 XXXX                  | 00          |
| 10355 BARNES Joseph C Rev  | 584-8576 1  |
| *IMMACULATE HEART          | 582-9998 2  |
| *IMMACULATE HET MARY       | 584-8576    |
| 10435 SISTER Superior      | 582-2689 2  |
| 10443 GUERRA Jose I        | 582-4010    |
| GUERRA Ruth A              | 582-4010    |
| 10509 XXXX                 | 00          |
| 10519 SANCHEZ J G          | 582-0574    |
| 10531 XXXX                 | 00          |
| 10559 VIZCARRA Julio Mira  | 594-5874    |
| 10595 XXXX                 | 00          |
| 10623 DELACRUZ Steve       | 582-1457 4  |
| 10625 XXXX                 | 00          |
| 10634 XXXX                 | 00          |
| 10700 *SNOW COMMODITIES CO | 582-6088    |
| 10803 *R W MARKET          | 582-2814 2  |
| 10854 XXXX                 | 00          |
| 10862 EDWARDS Roy          | 584-7547    |
| 10864 STONE Harlin         | 584-5740    |
| 10866 XXXX                 | 00          |
| 10868 WILLETT Armand J     | 582-6483 3  |
| 10870 XXXX                 | 00          |
| 10874 XXXX                 | 00          |
| 10876 DUDLEY Willard       | 584-5598    |
| HOANEY Eunne               | 584-5598    |
| 10878 RITCHIE Bernard      | 583-7209 7  |
| 10880 XXXX                 | 00          |
| 10882 SPEZZA Tony          | 583-8618 +0 |
| 10884 DENISON Jerry        | 584-6179 +0 |
| 10885 KLEVERER Herb        | 582-4573 1  |
| 10890 XXXX                 | 00          |
| 10894 ANDREWS David        | 584-7602 +0 |
| 10896 XXXX                 | 00          |
| 10898 XXXX                 | 00          |
| 10900 XXXX                 | 00          |
| 10902 JOHNSON R A          | 582-4692    |
| 10904 XXXX                 | 00          |
| 10906 BETTENCOURT Leonard  | 584-3509    |
| 10908 XXXX                 | 00          |
| 10912 XXXX                 | 00          |
| 10914 ROBERTS D A          | 584-9413 +0 |
| 10915 *RAD LIQUOR&FOOD     | 584-5065 +0 |
| 10916 XXXX                 | 00          |
| 10918 SILVA Tony R         | 582-4073    |
| 10920 BRAVO Sam            | 584-8863 8  |
| 10922 XXXX                 | 00          |
| 10924 WILLIAMS Oval B      | 584-1377 9  |
| 10926 XXXX                 | 00          |
| 10928 PHELPS Geo           | 582-7883 4  |
| 10930 XXXX                 | 00          |
| 10932 FOWLER Liz           | 584-4095 +0 |
| 10937 XXXX                 | 00          |
| 10940 PORTER Faye          | 582-3086 6  |
| 10942 HANDLEY J B          | 584-1132 +0 |
| 10944 XXXX                 | 00          |
| 10946 XXXX                 | 00          |
| 10948 RUTHERFORD Homer     | 584-3419 2  |
| 10950 LYNN Kenneth         | 583-1591 8  |
| 10952 XXXX                 | 00          |
| 10954 XXXX                 | 00          |
| 10956 XXXX                 | 00          |
| 10958 XXXX                 | 00          |
| 10976 HUTSELL Ivel O       | 582-8259    |
| 10978 XXXX                 | 00          |
| 10982 XXXX                 | 00          |
| 10984 XXXX                 | 00          |
| 10986 XXXX                 | 00          |
| 10996 THORNSBERRY Clark    | 584-9102 9  |
| 10998 *BELAIR MOBILE HM RK | 582-9492 9  |
| 11075 NATAL Faye           | 582-6155 7  |
| 11086 XXXX                 | 00          |
| 11120 XXXX                 | 00          |
| 11122 GUTIERREZ Lupa       | 584-4627 8  |
| 11126 XXXX                 | 00          |
| 11130 XXXX                 | 00          |
| 11132 XXXX                 | 00          |
| 11134 XXXX                 | 00          |
| 11151 NATALI Angelo        | 584-4050    |
| 11212 XXXX                 | 00          |
| 11274 *CALVARY CHRSTN CNTR | 582-2000 +0 |
| 11294 XXXX                 | 00          |
| 11303 XXXX                 | 00          |
| 11356 HAAS Walter          | 582-0727    |
| 11386 XXXX                 | 00          |
| 11402 MACEDO William Edw   | 582-2154    |
| 11464 AVALOS Louis         | 584-5056    |
| 11474 TORRES Jesus         | 584-5489    |
| 11526 XXXX                 | 00          |
| 11540 PURDY Darle          | 583-6242    |
| PURDY Neal                 | 583-6242    |
| 11669 GOMEZ Aleah          | 582-3649 1  |
| 12180 XXXX                 | 00          |
| 12246 OCMINGUEZ Ruben      | 582-8932 7  |
| 12358 SCHUMACHER Gerald    | 584-6053    |
| SHOEMAKER Gerald           | 584-6053    |
| 12406 WINTERBERG W L       | 584-4736    |
| 12458 FLOODMAN John A      | 584-4738 6  |
| 12536 XXXX                 | 00          |
| 12589 BILLINGBLEY S E      | 584-8519    |
| 12591 XXXX                 | 00          |
| 12628 SHUBERT Neal         | 584-8194    |
| 12629 XXXX                 | 00          |
| 12631 MITCHELL Harbert     | 584-7432    |
| 12633 RODRIGUEZ Eulalic    | 582-7710 8  |
| *SUICIDE MTRCYCL RPR       | 583-0815 9  |
| HUMA Gln                   | 582-1168 +0 |
| 12770 *VERSURC BROTHERS    | 584-8689 2  |
| 12918 XXXX                 | 00          |
| 12933 XXXX                 | 00          |
| 12954 XXXX                 | 00          |
| 18035 RAGAN Robt W         | 583-7045 8  |
| 13101 VANDERLASH H R       | 582-0446    |
| 13169 *DESJARDINS HAROLD   | 582-6800    |
| DESJARDINS Harold          | 582-9146    |
| *VETERINARY PHRMCTCLS      | 582-6800    |
| 13160 *REUSENB CAR CARE    | 583-7811 9  |
| 13331 CAMP Betty           | 584-0436    |
| CAMP Ralph                 | 584-0436    |
| *LEMOORE CHRSTN CNTR       | 584-0436 8  |
| 13335 XXXX                 | 00          |
| 13375 *MACIEL JOHN         | 582-4456    |
| *TRN COUNTIES EOP CO       | 582-2444 +0 |
| *TRN COUNTIES EQUIP        | 582-4458    |
| 13400 *A S C TUBING INC    | 583-1638 +0 |
| 13405 MACIEL Jim           | 582-7863    |
| MACIEL Kathy               | 582-7863 8  |
| 13488 DILLON Ade           | 582-2087    |
| 13515 FANN Russell E       | 584-5108    |
| 13520 COCHRAN Bryan        | 582-1467    |
| 13539 XXXX                 | 00          |
| 13549 *KINGS CMNTY TECH    | 583-6070 7  |
| 13575 RAMOS Danny          | 582-2688    |
| 13594 CHAVEZ Trinidad      | 583-7265 +0 |
| 13598 RODRIGUEZ Geo        | 583-6927 9  |
| 13704 *DAWSON WOODWORKS    | 583-6741 9  |

## HANFORD ARMONA RD 1990

| HANFORD ARMONA RD |                         | 93230 CONT. |
|-------------------|-------------------------|-------------|
|                   | *T D COPY SERVICE       | 584-2354 +D |
| 13706             | *CAL FEATHER PRDCTS     | 582-1815 8  |
| 13708             | XXXX                    | 00          |
| 13795             | KOS Lewis               | 582-2457    |
| 13860             | LEMMON D                | 583-8954 8  |
| 13914             | *SOUTH VLY AMBULANCE    | 584-9279 5  |
|                   | *SOUTH VLY MDCL SRVS    | 584-3373 5  |
| 13943             | COOEER Jas              | 582-3825 5  |
| 13953             | SHANNON Marthe O        | 583-8355 6  |
| 13963             | ADAMS Geo H             | 584-5021    |
| 13981             | DANIELSON W Ray         | 584-7136    |
| 13983             | *DANIELSONS HARDWARE    | 584-3359    |
| 14032             | HANLON Jas              | 582-3935    |
| 14041             | *ARMONA UN METHOOIST    | 584-8340    |
|                   | BAYARD Richard F        | 584-8340 4  |
| 14042             | ORR Dolcie              | 584-8161    |
| 14051             | HENDERSON Hershal B     | 584-4187    |
| 14083             | XXXX                    | 00          |
| 14082             | FABER W J               | 584-7157    |
| 14087             | CUNHA M E               | 584-8608    |
| 14099             | HOBSON E                | 584-6395    |
| 14118             | COMBS Allen             | 582-9729    |
| 14120             | STOCKTON Frances        | 584-2889 4  |
| 14136             | JASPER Michael          | 584-6486 +D |
| 14149             | XXXX                    | 00          |
| 14215             | MILLER E M              | 584-7249 6  |
| 14223             | BARBOZA Margerits       | 584-8645 +D |
| 14225             | XXXX                    | 00          |
| 14228             | HUNNICUTT Velmerie      | 582-9160    |
| 14270             | WILSON Wayne G          | 582-7020 9  |
| 14306             | APPLETON Earl           | 584-6303    |
| 14341             | *ARMONA ASSMBLY GOB     | 584-3973    |
| 14352             | DIBBLE Douglas D        | 582-6228    |
| 14412             | RANDELL Lonnie          | 582-5039    |
| 14416             | REDFEARN Sidney         | 582-3915 8  |
| 14444             | SILVIERA Manuel         | 584-7863    |
| 14446             | ROBINS Ritchie          | 584-7560    |
| 14475             | OWENS Jewell            | 583-1369 7  |
| 14490             | PROVENCIO Zake          | 582-3435 7  |
| 14700             | *LEMOORE BOBY WORKS     | 583-1489    |
| 14724             | *HOUSE OF PLANTS        | 583-6050 6  |
| 14725             | MACEDG Norman           | 684-5281    |
| 14989             | MACEDO M                | 584-3287    |
| 14992             | MARVIN Richard L        | 582-5515    |
|                   | * 45 BUS 196 RES 22 NEW |             |

## HANFORD ARMONA RD 1985

HANFORD ARMONA RD  
93230 HANFORD

|      |                     |          |    |
|------|---------------------|----------|----|
| 1433 | VANDERGRAAF ALBERT  | 584-8344 | 0  |
| 2243 | ANDRADA LOUIS       | 582-7482 |    |
| 2511 | BETTENCOURT GIL     | 582-5882 |    |
| 6025 | MARTIN JOHN A       | 584-9410 | 4  |
| 6160 | MATTOS MARY JEAN    | 582-9675 |    |
| 6233 | MARTIN S S          | 582-4535 | 6  |
| 6255 | MARTIN LOUIE        | 582-1870 |    |
| 6380 | MATTOS JON V        | 584-7277 | 7  |
| 8431 | BOTELHO JOSE        | 584-9959 | 3  |
|      | DAGRACA EMMANUEL    | 584-9673 | 3  |
|      | SILVA JESSE         | 584-2456 | 4  |
|      | SILVA MARY CARMEN   | 584-9867 | 3  |
| 6509 | XXXX                | 00       |    |
| 6585 | NORWOOD DICK        | 582-5654 |    |
| 6624 | BORGES CARLOS A     | 582-0520 | 3  |
| 6672 | CORREIA JOHN M      | 582-5820 | 0  |
| 6714 | BARNETT DOYLE H     | 582-6839 | 8  |
| 6800 | XXXX                | 00       |    |
| 6812 | ELLIS JOHN          | 582-3318 | 8  |
| 6850 | MEYER FRANK F       | 582-6758 | 9  |
| 6894 | GARZA IGNACIO       | 582-2674 | 7  |
| 7140 | WEAVER MICHAEL V    | 582-2477 | 3  |
| 7184 | COX W F             | 582-4764 | 8  |
| 7252 | FREA ERNEST L       | 582-7908 | +5 |
| 7479 | BETTENCOURT JOHN    | 584-5914 | 9  |
| 7480 | KINGS TULARE TALLOW | 923-4008 | +8 |
| 7666 | BROWN C             | 582-8476 | 6  |
| 7761 | XXXX                | 00       |    |
| 7818 | PEREIRRA JOSEPH     | 582-4586 | 7  |
| 7875 | KINGS CO SOLID WST  | 582-4850 |    |
| 8038 | CRAWFORD GENE       | 584-4917 | 2  |
| 8076 | HEWETT ROGER        | 584-3778 | 0  |
| 8265 | FREA BILL JR        | 582-2829 |    |
|      | FREA TRANSPORTATION | 582-2829 |    |
|      | HANFORD TRUCK RPR   | 582-8444 | +5 |
| 8395 | XXXX                | 00       |    |
| 8471 | RUTHERFORD DAN      | 582-8214 | 4  |
| 9248 | LAKE DALE W         | 582-3850 | 4  |
| 9365 | LOPEZ JOE R         | 582-9798 | 7  |
| 9443 | JIMENEZ BOBA RADIO  | 582-2088 | 3  |
|      | SATURNINO JIMENEZ   | 582-2048 | 3  |
| 9483 | KINGS CO ROOFING    | 582-8768 | 3  |
|      | KINGS CO ROOFING CO | 582-2250 | 2  |
|      | TAYLOR AIR STSTEMS  | 582-5878 | 4  |
| 9491 | JIMEHEZ DIANA       | 582-2468 | 3  |
| 9513 | DURAN JOHN A        | 582-0755 |    |
| 9539 | LOPEZ GUS M         | 582-5306 |    |
| 9839 | BETTENCOURT & SON   | 582-0187 | 4  |
| 9845 | CENTRAL VLY COOPRTV | 582-0321 | 0  |

## HANFORD ARMONA RD 1985

| HANFORD ARMONA RD | 93730 CONT.          |             |
|-------------------|----------------------|-------------|
| 9885              | XXXX                 | 00          |
| 10355             | BARNES JOSEPH C REV  | 584-6578 1  |
|                   | IMMACULATE HEART     | 582-8096 2  |
|                   | IMMACULATE HRT MARY  | 584-6878 8  |
| 10435             | SISTER SUPERIOR      | 582-2489 2  |
| 10443             | QUERRA JOSE I        | 582-4010 11 |
|                   | QUERRA RUTH A        | 582-4010 11 |
| 10509             | SANCHEZ TYRADO       | 584-6350    |
| 10519             | SANCHEZ J G          | 582-0574 11 |
| 10531             | XXXX                 | 00          |
| 10589             | VIZCARRA JULIO MRS   | 584-5874    |
| 10595             | SOTELO SOCORRO       | 584-0837 3  |
| 10623             | DELACRUZ STEVE       | 582-1457 4  |
| 10626             | XXXX                 | 00          |
| 10634             | XXXX                 | 00          |
| 10700             | SHOW COMMODITIES CO  | 582-9060    |
| 10633             | R N MARKET           | 582-2814 2  |
| 10654             | XXXX                 | 00          |
| 10662             | EDWARDS ROY          | 584-7547 9  |
| 10664             | STONE HARLIN         | 584-5740 11 |
| 10666             | XXXX                 | 00          |
| 10668             | WILLETT ARMAND J     | 582-6483 3  |
| 10672             | BUNTZ HOWARD         | 582-7277 11 |
| 10674             | TEFFT WARREN         | 582-8359 +5 |
| 10678             | DUDLEY WILLARD       | 584-5598 11 |
|                   | HOANEY EUNIA         | 584-5598 11 |
| 10678             | XXXX                 | 00          |
| 10600             | XXXX                 | 00          |
| 10882             | MEADOWS EDGIL L      | 584-1189 9  |
| 10886             | KLIEVER HERB         | 582-4573 1  |
| 10890             | SOPER GEO            | 584-7911 1  |
| 10894             | YOUNG M C            | 582-4208 2  |
| 10896             | IKE WILLIAM          | 582-4280 9  |
| 10898             | XXXX                 | 00          |
| 10900             | RAMOS JOHNNY L       | 584-5440 2  |
| 10902             | JOHNSON R A          | 582-4632 9  |
| 10904             | XXXX                 | 00          |
| 10906             | BETTENCOURT LEONARD  | 584-3609    |
| 10908             | BANNISTER HORACE L   | 582-4838    |
| 10912             | WIGHAM H C           | 582-1824 7  |
| 10914             | FRITTS BEN W         | 584-4037 0  |
| 10915             | XXXX                 | 00          |
| 10918             | SILVA TONY R         | 582-4073 0  |
| 10920             | CHISM FLOYD          | 584-5887 3  |
| 10922             | PUCKETT G            | 582-1178 3  |
| 10924             | WILLIAMS OVAL B      | 584-1377 0  |
| 10926             | VANDERZIEL JACOB     | 584-3627 3  |
| 10928             | PHELPS GEO           | 582-7883 4  |
| 10930             | XXXX                 | 00          |
| 10932             | MITCHELL T D         | 582-4559 8  |
| 10934             | HODSON GEO E         | 584-3998 6  |
| 10937             | XXXX                 | 00          |
| 10942             | XXXX                 | 00          |
| 10944             | NORTON LUTHER R      | 582-8364 +5 |
| 10946             | XXXX                 | 00          |
| 10948             | RUTHERFORD HOMER     | 584-3419 2  |
| 10950             | MCBRIDE CECIL C      | 582-4980 4  |
| 10952             | BELAIR MOBILE HM RK  | 582-9892 4  |
| 10954             | CLUTE CHARLES L      | 582-2347 7  |
| 10956             | XXXX                 | 00          |
| 10958             | APPLEBY RALPH        | 584-0676 2  |
| 10960             | XXXX                 | 00          |
| 10962             | COWAN B              | 584-4963 6  |
| 10964             | XXXX                 | 00          |
| 10966             | VANLEER G C REV      | 582-5172    |
| 10968             | XXXX                 | 00          |
| 10970             | XXXX                 | 00          |
| 10972             | PEMBERTON EDDIE      | 582-5339 3  |
| 10974             | XXXX                 | 00          |
| 10976             | HUTSELL IVEL O       | 582-8259 7  |
| 10978             | WESTMORELAND JEWEL   | 582-3174 7  |
| 10982             | CARROLL CHARLENE     | 582-8417 2  |
| 10984             | GREENO BOBBY D       | 584-2866 4  |
| 10988             | KARSHNER M L         | 584-0756 4  |
| 10990             | XXXX                 | 00          |
| 10992             | XXXX                 | 00          |
| 10994             | LUSK ANDY A          | 582-6675 11 |
| 10996             | STACY BEN L          | 582-4937 11 |
| 10998             | XXXX                 | 00          |
| 11088             | SEYMOUR KERRY L      | 584-9835 8  |
| 11120             | XXXX                 | 00          |
| 11122             | XXXX                 | 00          |
| 11126             | SHAMP MARY           | 583-8037 +5 |
| 11130             | CEFALIA TIMOTHY A    | 582-5190 2  |
| 11132             | JONES D              | 582-4541 3  |
| 11134             | XXXX                 | 00          |
| 11136             | GARCIA DENISE M      | 584-9516 +5 |
| 11151             | NATALI ANGELO        | 584-4050    |
| 11212             | XXXX                 | 00          |
| 11274             | CALVARY BAPT CHURCH  | 584-9075 8  |
| 11294             | XXXX                 | 00          |
| 11303             | ROSE VERA G MRS      | 582-6294    |
| 11356             | HAAS WALTER          | 582-0727    |
| 11386             | XXXX                 | 00          |
| 11402             | MACEO WILLIAM EDW    | 582-2154    |
| 11464             | AVALOS LOUIS         | 584-5066    |
| 11474             | TORRES JESUS         | 584-5489    |
| 11526             | MORAN BOB            | 584-0610 3  |
| 11540             | MINDER NICHOLAS      | 582-2079 2  |
| 11869             | GOMEZ ALEAH          | 582-3649 1  |
| 11948             | XXXX                 | 00          |
| 12150             | MARTINEZ ALBERT F    | 582-0503    |
| 12246             | RAMIREZ ROBERT JR    | 584-5987    |
| 12358             | SCHUMACHER GERALD    | 584-6053    |
|                   | SHOEMAKER GERALD     | 584-6053    |
| 12406             | WINTERBERG W L       | 584-4756    |
| 12458             | WINTERBERG WILL O    | 584-4730    |
| 12536             | XXXX                 | 00          |
| 12589             | BILLINGSLEY S E      | 584-8519    |
| 12591             | XXXX                 | 00          |
| 12628             | SHUBERT NEAL         | 684-8194 0  |
| 12629             | SERPA E L            | 582-2204    |
| 12631             | MITCHELL HERBERT     | 584-7432    |
| 12633             | XXXX                 | 00          |
| 12778             | VEPBURG SPCTHERS     | 584-8889 2  |
| 12918             | XXXX                 | 00          |
| 12939             | XXXX                 | 00          |
| 12854             | XXXX                 | 00          |
| 13035             | SILVEIRA JOHNNY T    | 582-5061 0  |
| 13101             | VANDERLAS H R        | 582-0446 0  |
| 13159             | DESJARDINS HAROLD    | 582-8400    |
|                   | DESJARDINS HAROLD    | 582-9146 8  |
|                   | VETERINARY PHARMACLS | 582-4803    |
| 13160             | AGRO CHEM PRODUCTS   | 582-5647 4  |
|                   | FRONTIER GENERAL ST  | 582-9447 +5 |
| 13331             | ALLEN RALPH          | 584-0436 3  |
|                   | PORT O CALL LEMOORE  | 584-0838 3  |
| 13335             | XXXX                 | 00          |
| 13375             | MACHEL JOHN          | 582-4458 0  |
|                   | TW COUNTIES EQUIP    | 582-4456    |
| 13529             | ELLISON PERCY        | 582-4065 +5 |
| 13706             | BRUVO IRRIGATION     | 584-2743 +5 |
| 13710             | C G G LAND REISMIC   | 584-5521 +5 |
| 13872             | STEPHENSON JOHN      | 584-7481 +8 |
| 13914             | SOUTH VLY AMBULANCE  | 584-9279 +8 |
|                   | SOUTH VLY MDCL SRVS  | 584-1373 +5 |
| 13943             | COOPER JAS           | 582-3825 +5 |
|                   | 30 BUS               | 156 RES     |
|                   |                      | 15 NEW      |

## HANFORD ARMONA RD 1980

| HANFORD ARMONA RD |                     |             |
|-------------------|---------------------|-------------|
| 93230 HANFORD     |                     |             |
| 1365              | XXXX                | 00          |
| 1433              | VANDERGRAAF ALBERT  | 584-8344 +0 |
| 2243              | ANDRADA LOUIS       | 582-7482 4  |
| 2511              | BETTENCOURT GIL     | 582-5882 4  |
| 6160              | MATTOS MARY JEAN    | 582-9675    |
| 6233              | MARTIN S S          | 582-4535 6  |
| 6255              | MARTIN LOUIE        | 582-1870 5  |
| 6380              | MATTOS JON V        | 584-7277 7  |
| 6431              | GONZALES MANUEL     | 584-4943 8  |
|                   | SILVA JESSE         | 584-6967 9  |
| 6509              | XXXX                | 00          |
| 6585              | NORWOOD DICK        | 582-5654 4  |
| 6624              | DANELL KELLY        | 582-6627 7  |
| 6672              | CORREIA JOHN M      | 582-5820 +0 |
| 6714              | BARNETT DOYLE H     | 582-8839 8  |
| 6812              | ELLIS JOHN          | 582-3318 8  |
| 6850              | MEYER FRANK F       | 582-6758 9  |
| 6894              | GARZA IGNACIO       | 582-2674 7  |
| 7184              | COX W F             | 582-4764 8  |
| 7252              | XXXX                | 00          |
| 7257              | SOSA ROSALINDA      | 582-8007 8  |
| 7479              | BETTENCOURT JOHN    | 584-5914 9  |
| 7480              | KARST DENNIS R      | 584-9953 +0 |
|                   | KINGS TULARE TALLOW | 686-4797 7  |
|                   | KINGS TULARE TALLOW | 582-0271 6  |
|                   | KINGS TULARE TALLOW | 923-4908 6  |
| 7666              | BROWN C             | 582-8476 6  |
| 7761              | BROWN MARY MISS     | 584-6752    |
| 7818              | PEREIRA JOSEPH      | 582-4586 7  |
| 7875              | KINGS CO OF WASTE   | 582-4850 5  |
| 8038              | XXXX                | 00          |
| 8076              | HEWETT ROGER        | 584-3778 +0 |
| 8265              | FREA BILL JR        | 582-2629    |
|                   | FREA TRANSPORTATION | 582-2629 7  |
|                   | FREA TRANSPORTATION | 686-0007 6  |
| 8395              | HOMAN ALBERT        | 582-0647    |
| 9248              | XXXX                | 00          |
| 9365              | LOPEZ JOE R         | 582-9796 7  |
| 9443              | JIMENEZ ROSA MARIA  | 582-2048    |
|                   | JIMENEZ SATURNINO   | 582-2048    |
| 9483              | KINGS CO ROOFING CO | 582-2250    |
|                   | KINGS COUNTY ROOFNG | 582-8759 +0 |
| 9491              | ABBOTT RICK         | 582-8285 8  |
| 9513              | DURAN JOHN A        | 582-0755    |
| 9539              | LOPEZ GUS M         | 582-5306    |
| 9845              | C V C CNTRL GINNING | 582-0321 +0 |
|                   | COTTON GINNING DEPT | 582-0321 +0 |
| 9865              | XXXX                | 00          |
| 10355             | IMMACULATE HRT MARY | 584-8576 6  |
|                   | IMMACULATE HRT MARY | 582-9998 5  |
| 10435             | SISTER SUPERIOR     | 582-2689    |
| 10443             | GUERRA JOSE I       | 582-4010 8  |
|                   | GUERRA RUTH A       | 582-4010 8  |
| 10509             | SANCHEZ TV&RADIO    | 584-8350    |
| 10519             | SANCHEZ J G         | 582-0574    |
| 10569             | VIZCARRA JULIO MRS  | 584-5874    |
| 10700             | SNOW COMMODITIES CO | 582-9086 5  |
| 10854             | PEREZ RICHARD A JR  | 582-6093 +0 |
| 10862             | EDWARDS ROY         | 584-7547 9  |
| 10864             | STONE HARLIN        | 584-5740 5  |
| 10868             | NORTON LUTHER R     | 582-7623 9  |
| 10872             | BUNTZ HOWARD        | 582-7277    |
| 10874             | SILVA G M           | 584-5963 7  |
| 10876             | DUDLEY WILLARD      | 584-5598 3  |
|                   | HOANEY EUNIA        | 584-5598    |
| 10878             | THOMAS E            | 584-6004 7  |
| 10880             | XXXX                | 00          |
| 10882             | MEADOWS EDGIL L     | 584-1189 9  |
| 10886             | XXXX                | 00          |
| 10890             | SOPER GEO           | 584-7911 3  |
| 10894             | PRESLEY K L         | 584-3656 6  |
| 10896             | IKE WILLIAM         | 582-4280 9  |
| 10898             | CARVITTO SHERRY     | 584-9342 +0 |
|                   | VIGARIO PEANUTS     | 564-9042 9  |
| 10900             | COLVERT C           | 584-8740 9  |
| 10902             | JOHNSON R A         | 582-4692 9  |
| 10904             | ANDERSON A H        | 584-7086 7  |
| 10906             | BETTENCOURT L       | 584-3609 3  |
| 10908             | BANNISTER HORACE L  | 582-4838    |
| 10912             | WIGHAM H C          | 582-1624 7  |
| 10914             | FRITTS BEN W        | 584-4037 +0 |
| 10915             | XXXX                | 00          |
| 10918             | SILVA TONY R        | 582-4073 +0 |
| 10920             | WAITE RAY           | 584-5034    |
| 10922             | HARSCHER I          | 582-6944 4  |
| 10924             | WILLIAMS OVAL B     | 584-1377 +0 |
| 10926             | YOUNG D M           | 582-2339    |
| 10928             | REEDY MAMIE         | 582-5230 5  |
| 10930             | GREEN OPAL M        | 584-7901    |
| 10932             | MITCHELL T D        | 582-4559 8  |
| 10934             | HODSON GEORGE E     | 584-3898 6  |
| 10937             | BRATTON RAS         | 582-2713 8  |
| 10938             | RUTLEDGE ALICE L    | 584-4040    |
| 10940             | XXXX                | 00          |
| 10942             | FANSETT ILAND       | 584-4209 8  |
| 10944             | XXXX                | 00          |
| 10946             | FAITH MARVIN        | 582-1230 9  |
| 10948             | XXXX                | 00          |
| 10950             | MENDENHALL D F      | 584-7768 7  |
| 10952             | BEL AIR MBL HM PK   | 584-6322 9  |
|                   | HERRICK E M         | 584-5672 7  |
|                   | HODSON RALPH M      | 584-6322 9  |
| 10954             | GLUTE CHARLES L     | 582-2347 7  |
| 10956             | MORRIS JACK R       | 584-6058 6  |
| 10958             | CADLE WILLIAM V     | 584-1320 +0 |

## HANFORD ARMONA RD 1980

| HANFORD ARMONA RD         | 93230 CONT  |
|---------------------------|-------------|
| 10960 XXXX                | 00          |
| 10962 COWAN B             | 584-4963 6  |
| 10964 KOONITZ N M         | 584-3485 4  |
| 10966 VANLEER C C REV     | 582-5172    |
| 10968 PHILLIPS LALA       | 584-5381    |
| 10970 XXXX                | 00          |
| 10972 REDMOND M H         | 584-7855 +0 |
| 10974A MITCHELL SCOTTY    | 584-9057 +0 |
| 10976 HUTSELL IVEL O      | 582-8259 7  |
| 10978 WESTMORELAND JEWEL  | 582-3174 7  |
| 10982 XXXX                | 00          |
| 10984 XXXX                | 00          |
| 10988 OVERTON MILES H     | 582-1477 +0 |
| 10990 XXXX                | 00          |
| 10992 XXXX                | 00          |
| 10994 LUSK ANDY A         | 582-6675 5  |
| 10996 STACY BEN L         | 582-4937 4  |
| 10998 XXXX                | 00          |
| 11079 MALAVOLTA MARY      | 582-8155 4  |
| 11088 SEYMOUR KERRY L     | 584-9935 8  |
| 11120 MARTINEZ NESTOR     | 584-8788 +0 |
| 11122 BUCKNUM R           | 584-8655 +0 |
| 11124 STALEY P            | 582-6096 +0 |
| 11126 XXXX                | 00          |
| 11130 CEFALIA TIMOTHY A   | 582-5190 4  |
| 11132 KITZMAN GEORGE      | 584-1139 +0 |
| 11136 XXXX                | 00          |
| 11151 NATALI ANGELO       | 584-4050    |
| 11212 HOSKINS HAROLD      | 582-1300 4  |
| 11274 CALVARY BAPT CHURCH | 584-8075 8  |
| 11294 XXXX                | 00          |
| 11303 ROSE VERA G MRS     | 582-6294 3  |
| 11356 HAAS WALTER         | 582-0727    |
| 11386 XXXX                | 00          |
| 11402 MACEDO WILLIAM EDW  | 582-2154    |
| 11464 AVALOS LOUIS        | 584-5066    |
| 11474 TORRES JESUS        | 584-5489    |
| 11526 XXXX                | 00          |
| 11669 SANCHEZ SIDONIA     | 584-7746    |
| 11948 TORREZ ANTONEO V    | 582-2657    |
| TORREZ JENNIE             | 582-2657 4  |
| 12150 MARTINEZ ALBERT F   | 582-0503 4  |
| 12246 RAMIREZ ROBERT JR   | 584-5987 5  |
| 12358 SCHUMACHER GERALD   | 584-6053    |
| SHOEMACHER GERALD         | 584-6053    |
| 12406 WINTERBERG DAN      | 584-4796 4  |
| 12458 WINTERBERG WILL O   | 584-4738 4  |
| 12536 STRAIN E R          | 584-7242    |
| 12589 BILLINGSLEY S E     | 584-8519    |
| 12591 XXXX                | 00          |
| 12628 SHUBERT NEAL        | 584-8194 +0 |
| 12629 SERPA E L           | 582-2204 3  |
| 12631 MITCHELL HERBERT    | 584-7432    |
| 12633 HEASLEY KENNETH K   | 582-3179 +0 |
| 12778 VERBURG REIN        | 584-6803    |
| 12918 XXXX                | 00          |
| 12939 HARP J R            | 582-8242 +0 |
| 12954 XXXX                | 00          |
| 13035 SILVEIRA JOHNNY T   | 582-5061 +0 |
| 13101 VANDERLAS H R       | 582-0446 +0 |
| 13159 DESJARDINS HAROLD   | 582-6800    |
| DESJARDINS HAROLD         | 582-9146 6  |
| VETERINRY PHRMCTCLS       | 582-6800 4  |
| 13160 XXXX                | 00          |
| 13331 QUALLS BARBARA      | 582-5551 +0 |
| 13375 MACIEL JOHN         | 582-4456 +0 |
| TRI CO EQUIPMENT CO       | 582-4456 3  |
| NO # MOBILE PAVNG&CLRNG   | 582-8968 +0 |
| ★ 21 BUS 152 RES 28 NEW   |             |



## HANFORD ARMONA RD 1975

| FRESNO 4 4 4 5 4 4 4 4 4 5 5 5 |          |         |   |
|--------------------------------|----------|---------|---|
| HANFORD ARMONA RD              | 93230    | HANFORD |   |
| 1365 HOPPER ROBT               | 734-9003 | 4       | 1 |
| 1433 PEREIRA ALTON J           | 582-6558 | 5       | 1 |
| 2243 ANDRADA LOUIS             | 582-7482 | 4       | 1 |
| 2511 BETTENCOURT GIL           | 582-5882 | 4       | 1 |
| 2911 XXXX                      | 00       |         | 1 |
| 6160 MATTOS MARY JEAN          | 582-9675 |         | 1 |
| 6255 MARTIN LOUIE              | 582-1870 | 5       | 1 |
| 6431 BERBEREIA JOS A           | 584-4287 | 5       | 1 |
| COELHO MANUEL P                | 584-6735 |         | 1 |
| MARTIN S S                     | 582-4535 | 3       | 1 |
| 6509 GARNER L R                | 582-2224 | 4       | 1 |
| 6585 WORMWOOD DICK             | 582-5654 | 4       | 1 |
| 6672 XXXX                      | 00       |         | 1 |
| 6714 SMITH BERT                | 584-7737 | 4       | 1 |
| 6812 SOUZA BOB                 | 584-3517 | 4       | 1 |
| 6976 BOYO J                    | 582-4282 | 5       | 1 |
| 7252 GALLAGHER EUGENE          | 582-3697 | 5       | 1 |
| 7316 CORONADO ANTONIO          | 584-8643 | 3       | 1 |
| 7479 BETTENCOURT JOHN          | 584-5914 |         | 1 |
| 7480 *KINGS TULARE TALLOW      | 586-7975 |         | 1 |
| 7666 SUBLETT JUANITA           | 582-8476 | 5       | 1 |
| 7761 BROWN MARY MISS           | 584-6752 |         | 1 |
| 7875 *KINGS CO WSTE DSPSL      | 582-4850 | 5       | 1 |
| 8038 ROBINSON JIM              | 582-3394 | 5       | 1 |
| 8265 FREA BILL JR              | 582-2629 |         | 1 |
| *FREA TRANSPORTATION           | 582-2629 | 5       | 1 |
| 8395 HOFMAN ALBERT             | 582-0647 |         | 1 |
| 8471 XXXX                      | 00       |         | 1 |
| 9248 STRINGER H L              | 584-6211 |         | 1 |
| 9441 XXXX                      | 00       |         | 1 |
| 9443 JIMENEZ ROSA MARIA        | 582-2048 |         | 1 |
| JIMENEZ SATURNINO              | 582-2048 |         | 1 |
| 9483 *KINGS CO ROOFING CO      | 582-2250 |         | 1 |
| 9491 XXXX                      | 00       |         | 1 |
| 9513 DURAN JOHN A              | 582-0755 |         | 1 |
| 9539 LOPEZ GUS M               | 582-5306 |         | 1 |
| 9591 XXXX                      | 00       |         | 1 |
| 9619 LOPEZ ERASMO              | 584-7610 | 4       | 1 |
| 9845 *C V C GINNING DEPT       | 582-0321 |         | 1 |
| *CENTRAL VLY COOP              | 582-0321 |         | 1 |
| 9848 XXXX                      | 00       |         | 1 |
| 9865 *STANDARD OIL PLANNG      | 582-2641 |         | 1 |
| 10355 *IMMACULATE HRT MARYS    | 582-9998 | 5       | 1 |
| 10435 SISTER RAPHAEL           | 584-8931 | 4       | 1 |
| *SISTER SUPERIOR               | 582-2689 |         | 1 |
| 10509 *SANCHEZ TVRADIO         | 584-8350 |         | 1 |
| 10519 SANCHEZ J G              | 582-0574 |         | 1 |
| 10531 SANCHEZ JOE G            | 582-3726 | 5       | 1 |
| 10556 BURKETT AOD              | 582-1941 |         | 1 |
| BURKETT MYRTLE                 | 582-1941 |         | 1 |
| 10569 VICCARA JULIO MRS        | 584-5874 |         | 1 |
| 10623 XXXX                     | 00       |         | 1 |
| 10700 *SNOW COMMODITIES CO     | 582-9086 | 5       | 1 |
| 10849 XXXX                     | 00       |         | 1 |
| 10862 ELLIS VIC                | 584-6165 | 4       | 1 |
| 10864 STONE HARLIN             | 584-5740 | 5       | 1 |
| 10866 XXXX                     | 00       |         | 1 |
| 10870 XXXX                     | 00       |         | 1 |
| 10872 BUNTZ HOWARD             | 582-7277 |         | 1 |
| 10874 XXXX                     | 00       |         | 1 |
| 10876 DUDLEY WILLARD           | 584-5598 | 3       | 1 |
| HOANEY EUNIA                   | 584-5598 |         | 1 |
| 10878 FRAZER CHAS              | 582-1327 |         | 1 |
| 10880 MENDENHALL ROBT O        | 582-5379 |         | 1 |
| 10882 XXXX                     | 00       |         | 1 |
| 10886 VOCE M E                 | 582-6860 |         | 1 |
| 10888 KAINERI LENA             | 582-9132 |         | 1 |
| 10890 SOPER GED                | 584-7911 | 3       | 1 |
| 10894 XXXX                     | 00       |         | 1 |
| 10896 FRY VERN L               | 582-6943 |         | 1 |
| 10898 TEEL WALTER              | 582-2608 | 3       | 1 |
| 10900 DARTENAY E J             | 582-0623 |         | 1 |
| 10902 *BEL AIR MBL HM PK       | 584-6322 | 4       | 1 |
| *HODSON RALPH M                | 584-6322 | 4       | 1 |
| 10904 ANDERSON CLIFFORD        | 584-7086 | 4       | 1 |
| 10906 BETTENCOURT L            | 584-3609 | 3       | 1 |
| 10908 BANNISTER HORACE L       | 582-4838 |         | 1 |
| 10912 WHITTEN LENA             | 582-9123 | 4       | 1 |
| 10914 UTSLER MARTHA            | 582-4300 | 3       | 1 |
| 10915 *STOP N GO MKT           | 582-9966 | 5       | 1 |
| 10916 LOWRY BERT               | 584-8837 | 3       | 1 |
| 10918 BETTENCOURT N            | 584-8300 |         | 1 |
| 10920 WHITE RAY                | 584-5034 |         | 1 |
| 10922 HARSCHER WM J            | 582-6944 | 4       | 1 |
| 10926 YOUNG D M                | 582-2339 |         | 1 |
| 10928 REEDY MAMIE              | 582-5230 | 5       | 1 |
| 10930 GREEN OPAL M             | 584-7901 |         | 1 |
| 10932 XXXX                     | 00       |         | 1 |
| 10934 XXXX                     | 00       |         | 1 |
| 10937 MIRANDA FRANK S          | 584-6383 | 4       | 1 |
| 10938 RUTLEDGE ALICE L         | 584-4040 |         | 1 |
| 10940 HOLMES V L               | 582-2098 | 3       | 1 |
| 10944 VERKUYL RICHARD J        | 584-3951 | 4       | 1 |
| 10946 BREEZE CLARENCE J        | 582-1230 | 3       | 1 |
| 10948 COTTON M A               | 584-4886 |         | 1 |
| 10950 HOPSON R W               | 582-9795 | 3       | 1 |
| 10952 ROSE EMILY               | 582-2676 |         | 1 |
| 10954 SOUZA JOE F              | 582-5177 |         | 1 |
| 10956 XXXX                     | 00       |         | 1 |
| 10964 KOONTZ N M               | 584-3485 | 4       | 1 |
| 10966 VANLEER C C REV          | 582-5172 |         | 1 |
| 10968 PHILLIPS LALA            | 584-5381 |         | 1 |
| 10970 RANDALL DENNIS           | 582-8516 | 5       | 1 |
| 10972 XXXX                     | 00       |         | 1 |
| 10976 WHITEHEAD D H            | 582-5270 |         | 1 |
| 10982 XXXX                     | 00       |         | 1 |
| 10984 WILSON LELA MAE MRS      | 584-4803 |         | 1 |
| 10990 PELLISSIER ELLEN         | 582-9335 |         | 1 |
| 10992 VANWYCK REX              | 584-4016 |         | 1 |
| 10994 LUSK ANDY A              | 582-6675 | 5       | 1 |
| 10995 XXXX                     | 00       |         | 1 |
| 10996 STACY BEN L              | 582-4937 | 4       | 1 |
| 10998 BERG GED                 | 582-6374 |         | 1 |
| 11002 XXXX                     | 00       |         | 1 |
| 11079 MALAVOLTA MARY           | 582-6155 | 4       | 1 |
| 11088 SEYMOUR RUTH J           | 584-7466 | 3       | 1 |
| 11120 ROSE DENNIS              | 584-4637 | 3       | 1 |
| 11122 WAHL TIM                 | 582-2217 | 4       | 1 |
| 11124 XXXX                     | 00       |         | 1 |
| 11126 XXXX                     | 00       |         | 1 |
| 11130 CEFALIA TIMOTHY A        | 582-5190 | 4       | 1 |
| 11132 XXXX                     | 00       |         | 1 |
| 11134 XXXX                     | 00       |         | 1 |
| 11136 HUDSPETH R C             | 582-9769 | 5       | 1 |

## HANFORD ARMONA RD 1975

|                           |              | 1975 |   |
|---------------------------|--------------|------|---|
| ..HANFORD ARMONA RD       | 93230 CONT.. |      | . |
| 11151 NATALI ANGELO       | 584-4050     |      | 1 |
| 11212 HOSKINS HAROLD      | 582-1300     | 4    |   |
| 11303 ROSE VERA G MRS     | 582-6294     | 3    |   |
| 11306 XXXX                | 00           |      | 1 |
| 11356 HAAS WALTER         | 582-0727     |      | 1 |
| 11386 KEITH N L           | 582-1826     |      | 1 |
| 11402 MACEDO WM EOW       | 582-2154     |      | 1 |
| 11454 RODRIGUEZ JESS V    | 584-4182     |      | 1 |
| 11464 AVALOS LOUIS        | 584-5066     |      | 1 |
| 11474 TORRES JESUS        | 584-5489     |      | 1 |
| 11526 PARSONS DONALD      | 584-8132     |      | 1 |
| 11607 LOVETT WAYNE        | 582-9751     | 4    |   |
| 11669 SANCHEZ SIDONIA     | 584-7746     |      | 1 |
| 11948 TORREZ ANTONEO V    | 582-2657     |      | 1 |
| TORREZ JENNIE             | 582-2657     | 4    |   |
| 12150 MARTINEZ ALBERT F   | 582-0503     | 4    |   |
| 12168 KENNEDY JERRY       | 582-0109     | 4    |   |
| 12246 RAMIREZ ROBT JR     | 584-5987     | +5   |   |
| 12358 SCHUMACHER GERALD   | 584-6053     |      |   |
| SHOEMACHER GERALD         | 584-6053     |      |   |
| 12406 MILLER MARY G       | 584-4796     | 4    |   |
| WINTERBERG DAN            | 584-4796     | 4    |   |
| 12458 WINTERBERG WILL D   | 584-4738     | 4    |   |
| 12536 STRAIN E R          | 584-7242     |      |   |
| 12589 BILLINGSLEY S E     | 584-8519     |      |   |
| 12591 GEE ROBT D          | 582-7769     | +5   |   |
| 12628 PRICE LARRY J       | 582-5061     |      |   |
| 12629 SERPA E L           | 582-2204     | 3    |   |
| 12631 MITCHELL HERBERT    | 584-7432     |      |   |
| 12764 XXXX                | 00           |      |   |
| 12778 VERBURG REIN        | 584-6803     |      |   |
| 12918 ELLIS DAVID W       | 582-6686     | +5   |   |
| 12939 XXXX                | 00           |      |   |
| 12954 XXXX                | 00           |      |   |
| 13101 BAHLER C D          | 582-0446     |      |   |
| 13159 DESJARDINS HAROLO   | 582-6800     |      |   |
| *VETERINRY PHRMCTCLS      | 582-6800     | 4    |   |
| 13331 XXXX                | 00           |      |   |
| *13375*MACIEL JOHN        | 582-4456     |      |   |
| *TRI COUNTIES EQUIP       | 582-4456     | 3    |   |
| 13515 XXXX                | 00           |      |   |
| 13529 ELLISON PERCY L     | 582-4061     |      |   |
| 13539 GOLDING PAUL        | 582-1569     |      |   |
| 13860 XXXX                | 00           |      |   |
| *13981 DANIELSON W RAY    | 584-7136     |      |   |
| 14086 MACCAGNO JOHN       | 584-6226     |      |   |
| 14092 BRYAN JENNIE P      | 584-7635     |      |   |
| 14099 HOBSON E            | 584-6395     |      |   |
| 14120 XXXX                | 00           |      |   |
| 14352 RICHWINE HOWARD     | 584-3984     |      |   |
| 14396 SILVA JOSEPHINE     | 582-3420     |      |   |
| 14860 XXXX                | 00           |      |   |
| 14989 XXXX                | 00           |      |   |
| 14992 MARVIN RICHARD L    | 584-6042     |      |   |
| 15030 XXXX                | 00           |      |   |
| 15523 RODRIGUES FRANK L   | 584-4885     |      |   |
| 15769 JAMES EPHRIAM       | 584-3534     |      |   |
| JAMES VIOLA               | 584-3534     |      |   |
| 15845 TOLEDO JOHN M       | 584-5140     |      |   |
| 15919 HAMILTON REBA       | 584-7551     |      |   |
| 15960 MENEZES JOHN S      | 584-5797     |      |   |
| 15981*CENTER CASH GROCERY | 582-9122     | 4    |   |
| * 18 BUS 168 RES          | 22 NEW       |      |   |

## HANFORD ARMONA RD 1973

HANFORD ARMONA RD 93230 HANFORD

|        |                      |            |
|--------|----------------------|------------|
| 2243   | ANDRADA LOUIS        | 584-5707   |
| 2511   | XXXX                 | 00         |
| 6160   | MATTOS MARY JEAN     | 582-9675   |
| 6431   | COELHO MANUEL P      | 584-6735   |
|        | FONTES JIM           | 582-2730+3 |
|        | MARTIN S S           | 582-4535+3 |
| 6672   | XXXX                 | 00         |
| 7316   | CORONADO ANTONIO     | 584-8643+3 |
| 7479   | BETTENCOURT JOHN     | 584-5914   |
| 7480*  | KINGS TOLARE TALLOW  | 582-0271   |
|        | *REINHART K E        | 582-0271   |
| 7666   | DIHEL MATT           | 582-2345   |
| 7761   | BROWN MARY MISS      | 584-6752   |
| 8265   | FREA BILL JR         | 582-2629   |
|        | *FREA BRDS TRANSPRTN | 686-0007+3 |
|        | *FREA TRANSPORTATION | 582-2629   |
| 8395   | HOMAN ALBERT         | 582-0647   |
| 8471   | XXXX                 | 00         |
| 9248   | STRINGER H L         | 584-6211   |
| 9441   | XXXX                 | 00         |
| 9443   | JIMENEZ ROSA MARIA   | 582-2048   |
|        | JIMENEZ SATURNINO    | 582-2048   |
| 9483*  | KINGS CO ROOFING CO  | 582-2250   |
| 9491   | ROSE LORNA           | 582-6638+3 |
| 9513   | DURAN JOHN A         | 582-0755   |
| 9539   | LOPEZ GUS M          | 582-5306   |
| 9591   | XXXX                 | 00         |
| 9845*  | C V C GINNING DEPT   | 582-0321   |
|        | *CENTRAL VLY COOP    | 582-0321   |
| 9848   | XXXX                 | 00         |
| 9865*  | STANDARD OIL PLANNG  | 582-2641   |
| 10355* | IMMACULATE HRT MARY  | 584-8576   |
|        | *PRIETO JULIAN M REV | 584-8576   |
| 10435* | SISTER SUPERIOR      | 582-2689   |
| 10509* | SANCHEZ TV&RADIO     | 584-8350   |
| 10519  | SANCHEZ J G          | 582-0574   |

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## HANFORD ARMONA RD 1973

| 1973 DIRECTORY              |              |    |
|-----------------------------|--------------|----|
| ..HANFORD ARMONA RD         | 93230 CONT.. | .. |
| 10531 XXXX                  | 00           | 15 |
| 10556 BURKETT ADD           | 582-1941     | 15 |
| BURKETT MYRTLE              | 582-1941     |    |
| 3 10569 VIZCARRA JULIO MRS  | 584-5874     |    |
| 10823 DUELLETTE JAS A       | 584-7363+3   |    |
| 10862 WULFORD CHAS L        | 582-3322+3   | 15 |
| 10864 XXXX                  | 00           | 15 |
| 10866 ANDERSON DANNY        | 582-3852     | 15 |
| 10870 MENDES F I JR         | 584-5803     | 15 |
| 10872 BUNTZ HOWARD          | 582-7277     |    |
| 10874 HALL HAROLD R         | 584-4514     |    |
| 3 10876 DUDLEY WILLARD      | 584-5598+3   |    |
| HODANEY EUNIA               | 584-5598     |    |
| 3 10878*BEL AIR MBL HOME    | PK584-6322   |    |
| FRAZER CHAS                 | 582-1327     |    |
| *HODSON RALPH M             | 584-6322+3   |    |
| 10880 MENDENHALL ROBT D     | 582-5379     | 7  |
| 10882 KOONS GLEN            | 582-9569+3   |    |
| 3 10884 ROGERS J D          | 582-5310     |    |
| 3 10886 VOCE M E            | 582-8860     |    |
| 10888 RAINIERI LENA         | 582-9132     |    |
| 10890 SOPER GED             | 584-7911+3   |    |
| 10894 ANDRITSIS LIA         | 584-5846     |    |
| 10896 FRY VERN L            | 582-6943     |    |
| 10898 ALVERNAY IDA          | 582-1530     |    |
| TEEL WALTER                 | 582-2608+3   |    |
| 10900 DARTENAY E J          | 582-0623     |    |
| 10902 HALL WM               | 582-0591+3   |    |
| 3 10904 ANDERSON CLIFFORD   | 582-1428+3   |    |
| 10906 BETTENCOURT L         | 584-3609+3   |    |
| 3 10908 BANNISTER HGRACE L  | 582-4838     |    |
| 10912 XXXX                  | 00           |    |
| 10914 UTSLER MARTHA         | 582-4300+3   |    |
| 10915*ARTS MARKET           | 582-9855     |    |
| 10916 LOWRY BERT            | 584-8837+3   |    |
| 10918 BETTENCOURT N         | 584-8300     |    |
| 10920 WAITE RAY             | 584-5034     |    |
| 3 10922 DELK LARRY          | 582-2182+3   |    |
| 10926 YOUNG D M             | 582-2339     |    |
| 10928 XXXX                  | 00           |    |
| 10930 GREEN OPAL M          | 584-7901     |    |
| 10932 LAPLANTE LOUIE A      | 584-8682+3   | 1  |
| 10938 RUTLEDGE ALICE L      | 584-4040     | 1  |
| 10940 HOLMES V L            | 582-2098+3   | 1  |
| 3 10944 BALL MANNING        | 584-3951     | 1  |
| 10946 BREEZE CLARENCE J     | 582-1230+3   | 1  |
| 10948 COTTON M A            | 584-4886     | 1  |
| 10950 HOPSON R W            | 582-9795+3   | 1  |
| 3 10952 ROSE EMILY          | 582-2676     | 1  |
| 10954 SOUZA JOE F           | 582-5177     | 1  |
| 3 10956 SHEPHERD JESSIE     | 582-5539+3   | 1  |
| 10958 RIRK J B              | 582-3074+3   | 1  |
| 10960 SOUZA EVELYN          | 582-5555     | 1  |
| 3 10964 ELLIS VIC           | 584-6165     | 1  |
| 10966 VANLEER C C REV       | 582-5172     | 1  |
| 10968 PHILLIPS LALA         | 584-5381     | 1  |
| 10970 PRESLEY K L           | 584-3856     | 1  |
| 10972 XXXX                  | 00           | 1  |
| 10976 WHITEHEAD D M         | 582-5270     | 1  |
| 10982 WILSON EDGAR          | 584-5067     | 1  |
| 3 10984 WILSON LELA MAE MRS | 584-4803     | 1  |
| 10990 PELLISSIER ELLEN      | 582-9335     | 1  |
| 10992 VANWYCK REX           | 584-4016     | 1  |
| 3 10994 KERR DUANE          | 582-6300+3   | 1  |
| 10995 STACY BEN L           | 582-4937     | 1  |
| 10998 RERG GEO              | 582-6374     | 1  |
| 3 11088 SEYMOUR RUTH J      | 584-7466+3   | 1  |
| 11120 ROSE DENNIS           | 584-4637+3   | 1  |
| 11124 MYERS GARY E          | 582-6818+3   | 1  |
| 11126 COTTON RICKY D        | 584-7421+3   | 1  |
| 3 11130 GRABOWSKI MICHAEL   | 582-3732+3   | 1  |
| 11132 BARNETT FRANK         | 582-0634+3   | 1  |
| 11134 MCCOMAS JOHN C        | 584-5169+3   | 1  |
| 11151 NATALI ANGELO         | 584-4050     | 1  |
| 3 11303 ROSE VERA G MRS     | 582-6294+3   | 1  |
| 3 11306 CASAREZ ANGEL R     | 582-7183     | 1  |
| 3 11356 HAAS WALTER         | 582-0727     | 1  |
| 11386 KEITH N L             | 582-1826     | 1  |
| 3 11402 MACEDO WM EDW       | 582-2154     | 1  |
| 11454 RODRIGUEZ JESS V      | 584-4182     | 1  |
| 11464 AVALOS LOUIS          | 584-5086     | 1  |
| 3 11474 TORRES JESUS        | 584-5489     | 1  |
| 11526 PARSONS DONALD        | 584-8132     | 1  |
| 11669 SANCHEZ SIDONIA       | 584-7746     | 1  |
| 11948 TORREZ ANTONIO V      | 582-2657     | 1  |
| 12246 SANCHEZ MARTIN        | 584-4127+3   | 1  |
| 12358 SCHUMACHER GERALD     | 584-6053     |    |
| SCHUMACHER GERALD           | 584-6053     |    |
| 12406 MILLER MARY G         | 584-5845     |    |
| WINTERBERG DAN              | 584-5845     |    |
| 12458 WINTERBERG WILL O     | 584-5708     |    |
| 12536 STRAIN E R            | 584-7242     |    |
| 12589 BILLINGSLEY S E       | 584-8519     |    |
| 3 12591 CRITES LESLIE S     | 584-8236     |    |
| 3 12628 PRICE LARRY J       | 582-5061     |    |
| 12629 SERPA E L             | 582-2204+3   |    |
| 3 12631 MITCHELL HERBERT    | 584-7432     |    |
| 12764*BLACKWHITE CATTLE     | 582-6082+3   |    |
| HOWZE T DAVID               | 582-5375+3   |    |
| SIECK HENRY S JR            | 582-6082+3   |    |
| 12778 VERBURG REIN          | 584-6803     |    |
| 12939 XXXX                  | 00           |    |
| 12954 BROCK RICHARD         | 582-5307+3   |    |
| 3 THOMPSON TERRY            | 582-0656+3   |    |
| 13101 BAHLER C D            | 582-0446     |    |
| 13159 DESJARDINS HAROLD     | 582-6800     |    |
| 13331 GARRETT GARY C        | 582-6990     |    |
| 13375*KINGS CO IMPLEMENT    | 582-4456     |    |
| *MACIEL JOHN                | 582-4456     |    |
| *TRI COUNTIES EQUIP         | 582-4456+3   |    |
| 13515 YATTI WM              | 584-7758     |    |
| 13529 ELLISON PERCY L       | 582-4061     |    |
| 3 13539 GOLDING PAUL        | 582-1569     |    |
| 13860 XXXX                  | 00           |    |
| 13981 DANIELSON W RAY       | 584-7136     |    |
| 14086 MACCAONO JOHN         | 584-6226     |    |
| 14092 BRYAN JENNIE P        | 584-7635     |    |
| 14099 HOBSON E              | 584-6395     |    |
| 14120 BURGESS JACK          | 582-1932     |    |
| 14352 RICHWINE HOWARD       | 584-3984     |    |
| 14396 SILVA JOSEPHINE       | 582-3420     |    |
| 14989 MACEDO M              | 584-7389     |    |
| 14992 MARVIN RICHARD L      | 584-6042     |    |
| 15030 XXXX                  | 00           |    |

## HANFORD ARMONA RD 1973

241

..HANFORD ARMONA RD 93230 CNT..  
15523 RODRIGUES FRANK L 584-4885  
15769 GRENZ DONALO 584-7437  
GRENZ VURLIE 584-7437  
JAMES EPHRIAM 584-3534  
JAMES VIOLA 584-3534  
15845 TOLEDO JOHN M 584-5140  
15919 HAMILTON REBA 584-7551  
15960 MENEZES JOHN S 584-5797  
15981 \*CENTER CASH GROCERY 582-0986  
\*UNDERWOOD EDGAR R 582-0986  
\* 21 BUS 149 RES 41 NEW

**VTTM 943**

Hanford Armona Road  
Hanford, CA 93230

Inquiry Number: 7674781.7  
June 10, 2024

## EDR Environmental Lien and AUL Search

## EDR Environmental Lien and AUL Search

The EDR Environmental Lien Search Report provides results from a search of available current land title records for environmental cleanup liens and other activity and use limitations (AULs), such as engineering controls and institutional controls.

A network of professional, trained researchers, following established procedures, uses client supplied address information to:

- search for parcel number and/or legal description
- search for ownership information
- research official land title documents recorded at jurisdictional agencies such as recorders' offices, registries of deeds, county clerks' offices, etc.
- search for publicly available environmental encumbering instrument(s) filed on or after the recording of the current deed; between the recording of the current deed and the most current publicly available date
- provide a copy of any environmental encumbrance(s)
- provide a copy of the current deed when available

***Thank you for your business.***

Please contact EDR at 1-800-352-0050  
with any questions or comments.

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## EDR Environmental Lien and AUL Search

### TARGET PROPERTY INFORMATION

#### ADDRESS

Hanford Armona Road  
VTTM 943  
Hanford, CA 93230

### ENVIRONMENTAL LIEN

Environmental Lien:                      Found ☐                      Not Found ☒

### OTHER ACTIVITY AND USE LIMITATIONS (AULs)

AULs:                                              Found ☐                                              Not Found ☒



**RESEARCH SOURCE**

---

**Source 1:**  
Kings Recorder  
Kings, CA

**PROPERTY INFORMATION****Deed 1:**

|                         |                                                    |
|-------------------------|----------------------------------------------------|
| Type of Deed:           | deed                                               |
| Title is vested in:     | Middlefield Manor LLC                              |
| Title received from:    | Quercus Grp LLC Margot Griswold Charlotte Griswold |
| Deed Dated              | 3/2/2018                                           |
| Deed Recorded:          | 4/10/2018                                          |
| Book:                   | NA                                                 |
| Page:                   | na                                                 |
| Volume:                 | na                                                 |
| Instrument              | na                                                 |
| Docket                  | NA                                                 |
| Land Record Comments:   |                                                    |
| Miscellaneous Comments: |                                                    |

**Legal Description:** See Exhibit

**Legal Current Owner:** Middlefield Manor LLC

**Parcel # / Property Identifier:** 011-040-008

**Comments:** See Exhibit

## **Deed Exhibit 1**

RECORDING REQUESTED BY:  
Stewart Title of California, Inc.

WHEN RECORDED MAIL TO:  
AND MAIL TAX STATEMENT TO:

Middlefield Manor, LLC  
20900 Boyce Lane  
Saratoga, CA 95070

ORDER NO. 174793  
APN: 011-040-008, 011-040-040, 011-040-027



DOC NBR: 1805681 04/10/2018 08:34:00 AM  
OFFICIAL RECORDS OF Kings County  
Clerk-Recorder, Kristine Lee  
RECORDING FEE: \$37.00  
COUNTY TAX: \$1,809.50  
CITY TAX: \$0.00



STEWART TITLE

DOC TYPE: 07  
9 PGS  
R057

SPACE ABOVE THIS LINE FOR RECORDERS USE

## GRANT DEED

THE UNDERSIGNED GRANTOR(s) DECLARE(s)

DOCUMENTARY TRANSFER TAX is \$1,809.50

CITY TAX \$0.00

- ☐ Monument Preservation Fee is: \$
- ☒ computed on full value of property conveyed, or
- ☐ computed on full value less value of liens or encumbrances remaining at time of sale.

X Unincorporated area City of \_\_\_\_\_

FOR A VALUABLE CONSIDERATION, receipt of which is hereby acknowledged,

Margot Griswold, as her sole and separate property, as to an undivided 12.50% interest and Charlotte Griswold-Tergis, as her sole and separate property, as to an undivided 12.50% interest and Edward H. Griswold, as his sole and separate property, as to an undivided 12.50% interest and Wendy Lewis, as her sole and separate property, as to an undivided 12.50% interest and Tedra Lee Battaglia, as her sole and separate property, as to an undivided 12.50% interest and The Quercus Group, LLC a California Limited Liability Company, as to an undivided 37.50% interest

hereby **GRANT(S)** to Middlefield Manor, LLC, A California Limited Liability Company

the following described real property in an unincorporated area, County of Kings, State of California:

See Exhibit "A" attached hereto and made a part hereof.

Date: March 2, 2018

Margot Griswold

Charlotte Griswold-Tergis  
Charlotte Griswold-Tergis

Edward H. Griswold  
Edward H. Griswold

Tedra Lee Battaglia  
Tedra Lee Battaglia

Wendy Lewis  
Wendy Lewis

The Quercus Group, LLC a California Limited Liability Company

By: Susan J. Kennedy  
Susan J. Kennedy, Operating Manager and Treasurer

By: \_\_\_\_\_  
Marjorie R. Eldevik, Manager and Secretary

MAIL TAX STATEMENT AS DIRECTED ABOVE

\_\_\_\_\_  
Margot Griswold

\_\_\_\_\_  
Charlotte Griswold-Tergis

\_\_\_\_\_  
Edward H. Griswold

\_\_\_\_\_  
Wendy Lewis

\_\_\_\_\_  
Tedra Lee Battaglia

The Quercus Group, LLC a California Limited Liability Company

By: \_\_\_\_\_  
Susan J. Kennedy, Operating Manager and Treasurer

By: Marjorie R. Eldevik Manager and Secretary  
Marjorie R. Eldevik, Manager and Secretary

MAIL TAX STATEMENT AS DIRECTED ABOVE

Margot Griswold 3/26/18  
Margot Griswold

Charlotte Griswold-Tergis

Edward H. Griswold

Tedra Lee Battaglia

Wendy Lewis

The Quercus Group, LLC a California Limited Liability Company

By: Susan J. Kennedy, Operating Manager and Treasurer

By: Marjorie R. Eldevik, Manager and Secretary

MAIL TAX STATEMENT AS DIRECTED ABOVE

California Notarial  
Loose Certificate  
Attached

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached and not the truthfulness, accuracy, or validity of that document.

State of California  
County of Kings

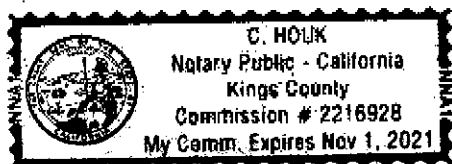
On 3/24/2018 before me C. Houk -, Notary Public personally appeared Charlotte Griswold - Tergis and Susan J. Kennedy, who proved to me on the basis of satisfactory evidence to be the person(s), whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s) or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature C. Houk

(seal)





# All-Purpose Acknowledgement

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California

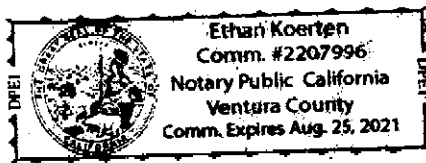
County of Ventura

On MARCH 26th 2018 before me, Ethan Koerten, Notary Public personally appeared  
(insert name and title of the officer)

MARGOT GREENWOLD

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.



WITNESS my hand and official seal.

[Signature]  
(SEAL) SIGNATURE

## OPTIONAL INFORMATION

The acknowledgment contained within this document is in accordance with California law. Any certificate of acknowledgment performed within the State of California shall use the preceding wording pursuant to Civil Code section 1189. An acknowledgment cannot be affixed to a document sent by mail or otherwise delivered to a notary public, including electronic means, whereby the signer did not personally appear before the notary public, even if the signer is known by the notary public. In addition, the correct notarial wording can only be signed and sealed by a notary public. The seal and signature cannot be affixed to a document without the correct notarial wording.

THE INFORMATION BELOW IS OPTIONAL. HOWEVER, IT MAY PROVE VALUABLE AND COULD PREVENT FRAUDULENT ATTACHMENT OF THIS FORM TO AN UNAUTHORIZED DOCUMENT.

### CAPACITY CLAIMED BY THE SIGNER

- ☐ INDIVIDUAL
- ☐ CORPORATE OFFICER
- ☐ PARTNER (S)
- ☐ ATTORNEY-IN-FACT
- ☐ TRUSTEE
- ☐ OTHER \_\_\_\_\_

### DESCRIPTION OF ATTACHED DOCUMENT

Grant DEED  
TITLE OR TYPE OF DOCUMENT

5  
NUMBER PAGES (INCLUDING ACKNOWLEDGMENT)

3/26/2018  
DATE OF DOCUMENT

\_\_\_\_\_  
OTHER

GENERAL CALIFORNIA ACKNOWLEDGEMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached and not the truthfulness, accuracy, or validity of that document.

State of California,  
County of Kings } ss.

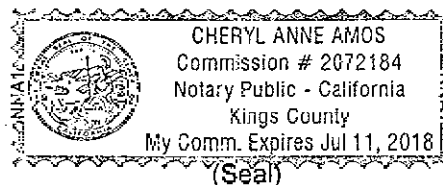
On March 29, 2018 before me Cheryl Anne Amos

Notary Public (here insert name and title of the officer) personally appeared  
Edward H. Griswold

who proved to me on the basis of satisfactory evidence to be the person(s), whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s) or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.  
WITNESS my hand and official seal.

Signature Cheryl Anne Amos



State of California  
County of Kings } ss.

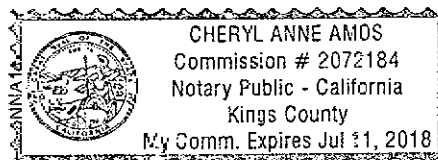
On April 2, 2018 before me Cheryl Anne Amos

Notary Public (here insert name and title of the officer) personally appeared  
Wendy Lewis and Tessa Lee Battaglia

who proved to me on the basis of satisfactory evidence to be the person(s), whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s) or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.  
WITNESS my hand and official seal.

Signature Cheryl Anne Amos



(Seal)

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached and not the truthfulness, accuracy, or validity of that document.

State of California  
County of Kings

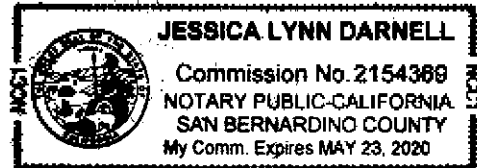
On March 30 2018 before me Jessica Lynn Darnell, Notary Public personally appeared Marjorie R. Eldevik, who proved to me on the basis of satisfactory evidence to be the person(s), whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s) or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature Jessica Lynn Darnell

(seal)



**EXHIBIT "A"**  
**LEGAL DESCRIPTION**

Parcel 1: 011-040-008 and 011-040-010

All that portion of the west half of the northeast quarter of section 3, township 19 south, range 21 east, mount diablo base and meridian, according to the official plat thereof, described as follows:

Beginning at the northwest corner of said northeast quarter; thence south along the west line thereof a distance of 43.26 chains, more or less, to the southwest corner of said northeast quarter; thence east along the south line of said quarter section; 15.64 chains to the center of a water ditch; thence northerly along the center line of said water ditch 43.26 chains to a point in the north line of said northeast quarter; thence west along said north line a distance of 16.25 chains, more or less, to the point of beginning.

Parcel 2: 011-040-027

That portion of the southeast quarter of the northwest quarter of section 3, township 19 south, range 21 east, mount diablo base and meridian, in the county of Kings, state of California, more particularly described as parcel 2 of parcel map recorded in book 5, page 72, of parcel map recorded in Book 5, Page 72 of parcel maps, Kings County Records.

APN: 011-040-008, 011-040-010, 011-040-027

**VTTM 943**

Hanford Armona Road  
Hanford, CA 93230

Inquiry Number: 7674781.6  
June 06, 2024

# The EDR Property Tax Map Report

## EDR Property Tax Map Report

Environmental Data Resources, Inc.'s EDR Property Tax Map Report is designed to assist environmental professionals in evaluating potential environmental conditions on a target property by understanding property boundaries and other characteristics. The report includes a search of available property tax maps, which include information on boundaries for the target property and neighboring properties, addresses, parcel identification numbers, as well as other data typically used in property location and identification.

## NO COVERAGE

***Thank you for your business.***

Please contact EDR at 1-800-352-0050  
with any questions or comments.

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VTTM 943

Hanford Armona Road

Hanford, CA 93230

Inquiry Number: 7674781.3

June 06, 2024

## Certified Sanborn® Map Report



6 Armstrong Road, 4th floor  
Shelton, CT 06484  
Toll Free: 800.352.0050  
[www.edrnet.com](http://www.edrnet.com)

# Certified Sanborn® Map Report

06/06/24

**Site Name:**

VTTM 943  
Hanford Armona Road  
Hanford, CA 93230  
EDR Inquiry # 7674781.3

**Client Name:**

Geotek  
1548 North Maple Street  
Corona, CA 92880  
Contact: Kyle Richard Mchargue



The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Geotek were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting [www.edrnet.com/sanborn](http://www.edrnet.com/sanborn).

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

## Certified Sanborn Results:

**Certification #** 5F26-4BCF-B5FD

**PO #** 3951-CR

**Project** 3951-CR

### UNMAPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.



Sanborn® Library search results

Certification #: 5F26-4BCF-B5FD

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☒ Library of Congress
- ☒ University Publications of America
- ☒ EDR Private Collection

*The Sanborn Library LLC Since 1866™*

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VTTM 943

Hanford Armona Road

Hanford, CA 93230

Inquiry Number: 7674781.4

June 06, 2024

# EDR Historical Topo Map Report

## with QuadMatch™



6 Armstrong Road, 4th floor  
Shelton, CT 06484  
Toll Free: 800.352.0050  
[www.edrnet.com](http://www.edrnet.com)

# EDR Historical Topo Map Report

06/06/24

**Site Name:**

VTTM 943  
Hanford Armona Road  
Hanford, CA 93230  
EDR Inquiry # 7674781.4

**Client Name:**

Geotek  
1548 North Maple Street  
Corona, CA 92880  
Contact: Kyle Richard Mchargue



EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Geotek were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDR's Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

**Search Results:****Coordinates:**

|                 |         |                      |                                |
|-----------------|---------|----------------------|--------------------------------|
| <b>P.O.#</b>    | 3951-CR | <b>Latitude:</b>     | 36.309918 36° 18' 36" North    |
| <b>Project:</b> | 3951-CR | <b>Longitude:</b>    | -119.680091 -119° 40' 48" West |
|                 |         | <b>UTM Zone:</b>     | Zone 11 North                  |
|                 |         | <b>UTM X Meters:</b> | 259371.98                      |
|                 |         | <b>UTM Y Meters:</b> | 4021657.74                     |
|                 |         | <b>Elevation:</b>    | 243.00' above sea level        |

**Maps Provided:**

2021  
2018  
2015  
2012  
1976  
1954  
1926

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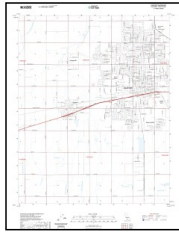
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## ***Topo Sheet Key***

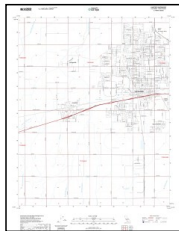
This EDR Topo Map Report is based upon the following USGS topographic map sheets.

### **2021 Source Sheets**



Hanford  
2021  
7.5-minute, 24000

### **2018 Source Sheets**



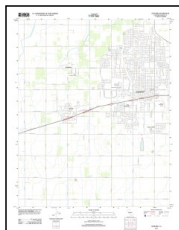
Hanford  
2018  
7.5-minute, 24000

### **2015 Source Sheets**



Hanford  
2015  
7.5-minute, 24000

### **2012 Source Sheets**

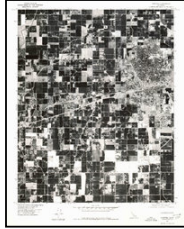


Hanford  
2012  
7.5-minute, 24000

## **Topo Sheet Key**

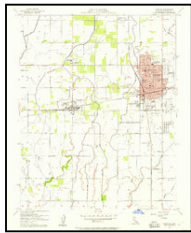
This EDR Topo Map Report is based upon the following USGS topographic map sheets.

### **1976 Source Sheets**



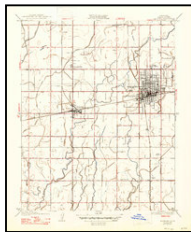
Hanford  
1976  
7.5-minute, 24000  
Aerial Photo Revised 1976

### **1954 Source Sheets**



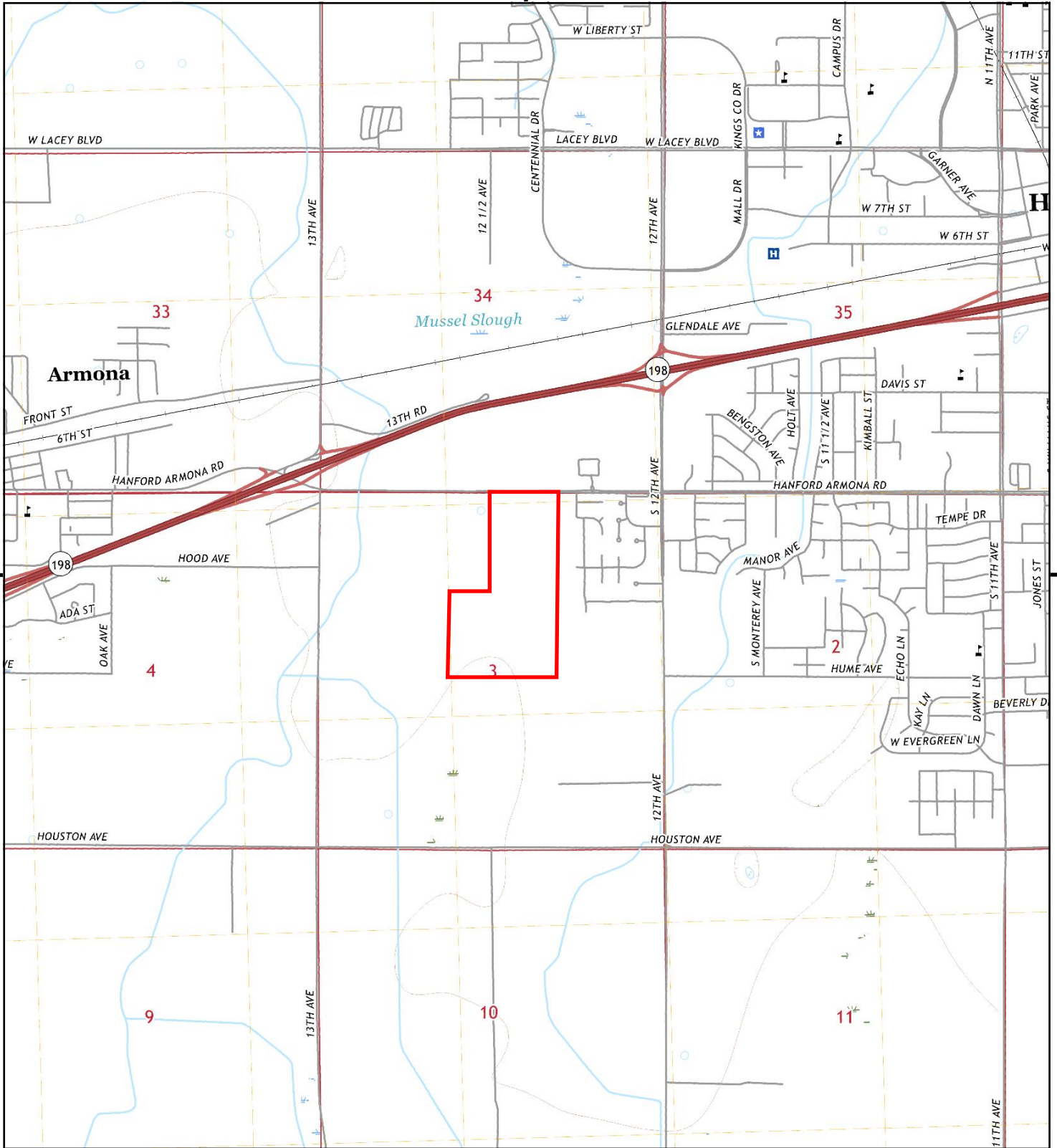
Hanford  
1954  
7.5-minute, 24000  
Aerial Photo Revised 1950

### **1926 Source Sheets**

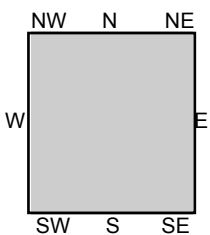
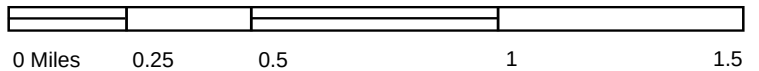


Hanford  
1926  
7.5-minute, 31680





This report includes information from the following map sheet(s).

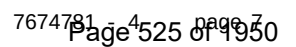


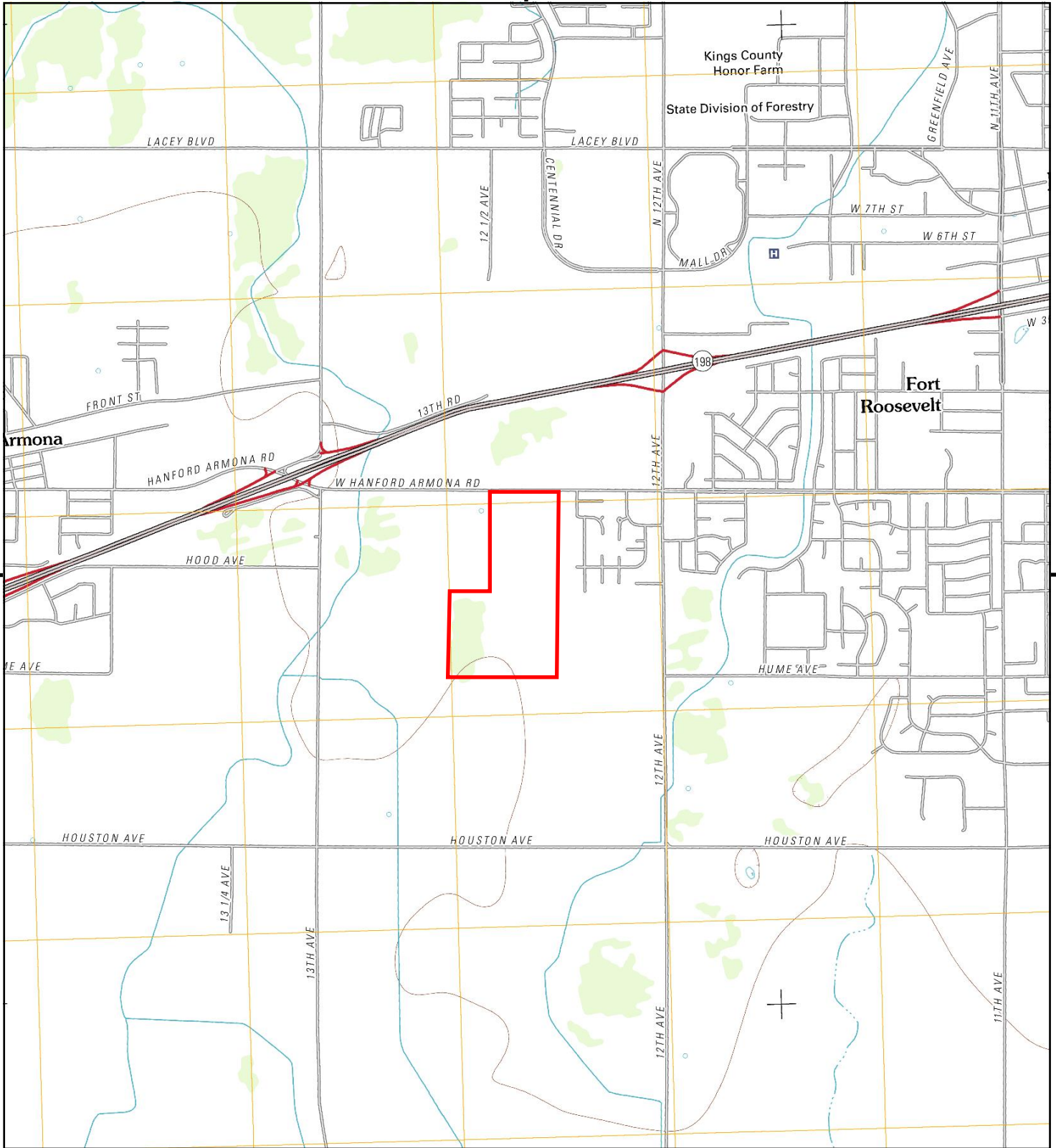
TP, Hanford, 2018, 7.5-minute

SITE NAME: VTTM 943  
ADDRESS: Hanford Armona Road  
Hanford, CA 93230  
CLIENT: Geotek

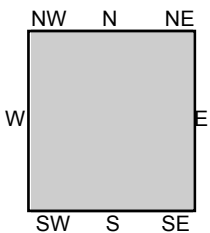
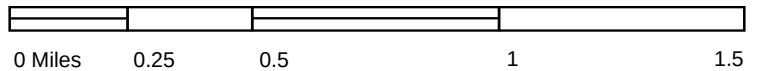








This report includes information from the following map sheet(s).

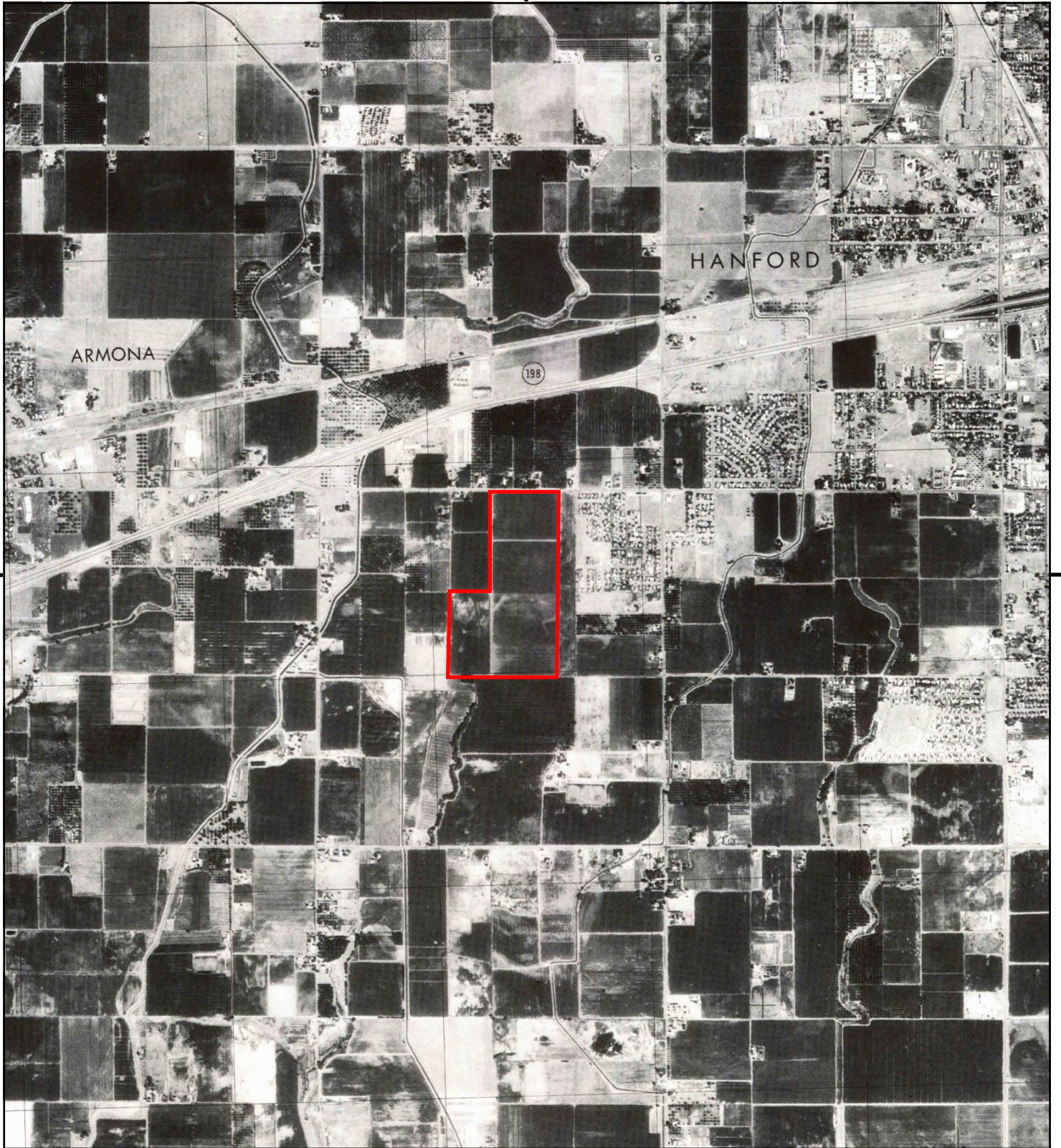


TP, Hanford, 2012, 7.5-minute

SITE NAME: VTTM 943  
ADDRESS: Hanford Armona Road  
Hanford, CA 93230  
CLIENT: Geotek







This report includes information from the following map sheet(s).

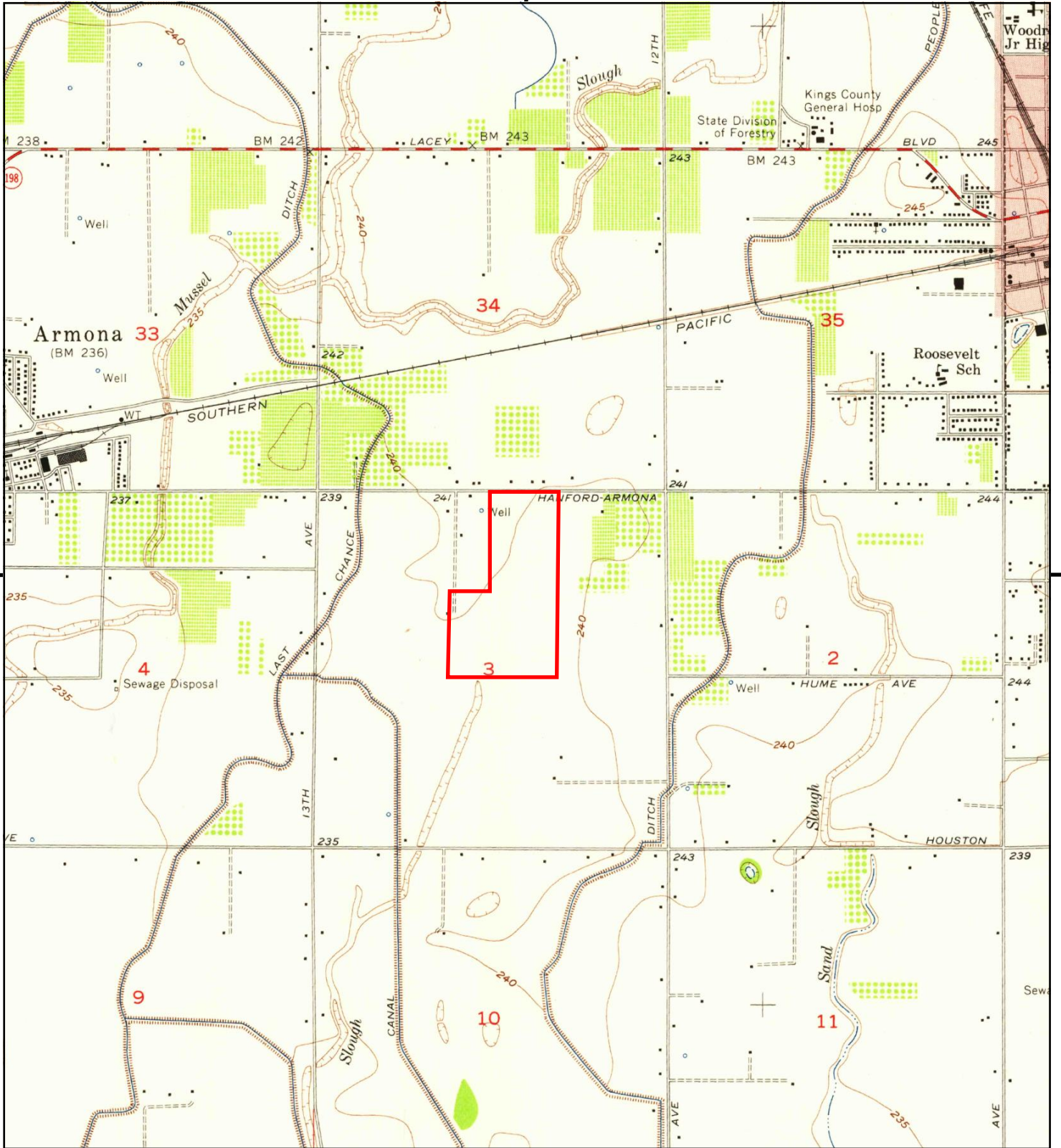


TP, Hanford, 1976, 7.5-minute

SITE NAME: VTTM 943  
ADDRESS: Hanford Armona Road  
Hanford, CA 93230  
CLIENT: Geotek







This report includes information from the following map sheet(s).

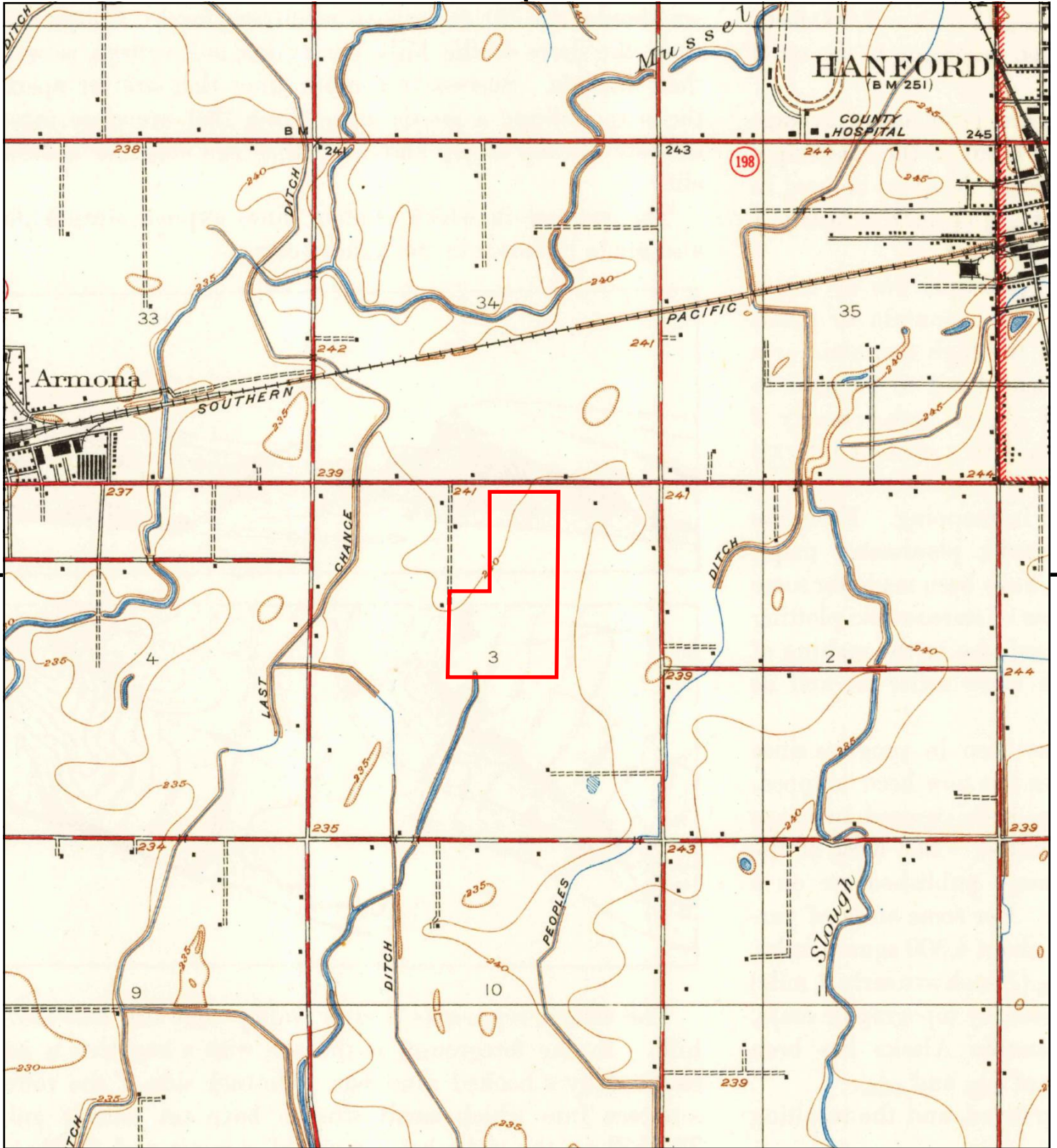


TP, Hanford, 1954, 7.5-minute

SITE NAME: VTTM 943  
ADDRESS: Hanford Armona Road  
Hanford, CA 93230  
CLIENT: Geotek







This report includes information from the following map sheet(s).



TP, Hanford, 1926, 7.5-minute

SITE NAME: VTTM 943  
ADDRESS: Hanford Armona Road  
Hanford, CA 93230  
CLIENT: Geotek



## APPENDIX C

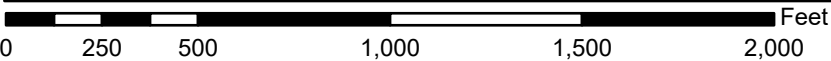
### QUESTIONNAIRE(S) AND SITE DOCUMENTS FROM OTHER SOURCES



# National Flood Hazard Layer FIRMette



119°41'9"W 36°18'48"N



1:6,000

119°40'32"W 36°18'19"N

Basemap Imagery Source: USGS National Map 2023

## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

|                             |  |                                                                                                                                                                   |
|-----------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SPECIAL FLOOD HAZARD AREAS  |  | Without Base Flood Elevation (BFE)<br>Zone A, V, A99                                                                                                              |
|                             |  | With BFE or Depth Zone AE, AO, AH, VE, AR                                                                                                                         |
|                             |  | Regulatory Floodway                                                                                                                                               |
| OTHER AREAS OF FLOOD HAZARD |  | 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X |
|                             |  | Future Conditions 1% Annual Chance Flood Hazard Zone X                                                                                                            |
|                             |  | Area with Reduced Flood Risk due to Levee. See Notes. Zone X                                                                                                      |
|                             |  | Area with Flood Risk due to Levee Zone D                                                                                                                          |
| OTHER AREAS                 |  | NO SCREEN Area of Minimal Flood Hazard Zone X                                                                                                                     |
|                             |  | Effective LOMRs                                                                                                                                                   |
|                             |  | Area of Undetermined Flood Hazard Zone D                                                                                                                          |
| GENERAL STRUCTURES          |  | Channel, Culvert, or Storm Sewer                                                                                                                                  |
|                             |  | Levee, Dike, or Floodwall                                                                                                                                         |
| OTHER FEATURES              |  | 20.2 Cross Sections with 1% Annual Chance Water Surface Elevation                                                                                                 |
|                             |  | 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation                                                                                                 |
|                             |  | Coastal Transect                                                                                                                                                  |
|                             |  | Base Flood Elevation Line (BFE)                                                                                                                                   |
|                             |  | Limit of Study                                                                                                                                                    |
|                             |  | Jurisdiction Boundary                                                                                                                                             |
|                             |  | Coastal Transect Baseline                                                                                                                                         |
|                             |  | Profile Baseline                                                                                                                                                  |
| MAP PANELS                  |  | Digital Data Available                                                                                                                                            |
|                             |  | No Digital Data Available                                                                                                                                         |
|                             |  | Unmapped                                                                                                                                                          |



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 6/27/2024 at 2:53 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

# PROPERTY QUESTIONNAIRE

To the best of your actual knowledge and in good faith, please complete the following property questionnaire and return to GeoTek (contact information below).

## PROPERTY INFORMATION

Property/Site Name: 75 Acres, Hanford Armona Road  
Property Street Address(es): \_\_\_\_\_  
Property City, State, Zip: Hanford, CA, 93230

## PROPERTY LAND USE DESCRIPTION

Area of Property (square feet or acres) 75.02 Acres, more or less  
Assessor Parcel Number(s): 011-040-08, 10, 27  
Additional Street Addresses used at Property (current or past) NONE  
Description of Property and Improvements (number of buildings, date(s) of construction, type of buildings, former structures no longer on property): No buildings  
Agricultural Irrigation System

## UTILITY SERVICES (list suppliers/providers/servicers)

Electric: PG&E & SMUD Natural Gas: NONE  
Propane: NONE Water: NONE  
Sewer: NONE Trash Removal: Not at this time

## CURRENT/PRIOR PROPERTY OWNERSHIP AND USE

How long have you owned the property? APRIL, 2018  
Describe the property usage during your ownership: Farming, Irrigated Row Crops  
Who owned the property before you and for how long? Margot Griswold, Ed Griswold, Tedra Lee Battaglia, The Quercus Group - many years  
Describe the property usage prior to your ownership: Same - farming, row crop. The SW 20 acres had walnuts (removed 2011)

## ADJOINING PROPERTY LAND USE DESCRIPTION

North Land Use: Church, Ag South Land Use: AG  
East Land Use: SFR West Land Use: AG → SFR

Your Name: Marc R. Frelier Firm: MRF Lands / Silicon Valley Ranch, LLC  
Please Return to GeoTek, Inc.  
kmchargue@geotekusa.com 1548 N. Maple St., Corona, CA 92585  
Phone: (951) 710-1160

# PROPERTY QUESTIONNAIRE

Signature: Marc R. Frelw Date: May 17, 2024

| No. | Question                                                                                                                                                                                                                                                                                                                                                                 | Please indicate your response to each question.<br>("Unk" indicates a response of "unknown") |    |     | Please explain each affirmative or unknown answer in the space provided. |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|----|-----|--------------------------------------------------------------------------|
|     |                                                                                                                                                                                                                                                                                                                                                                          | Yes                                                                                          | No | Unk |                                                                          |
| 1a  | Is the <i>property</i> used for an industrial use?                                                                                                                                                                                                                                                                                                                       |                                                                                              | ✓  |     |                                                                          |
| 1b  | Is any <i>adjoining property</i> used for an industrial use?                                                                                                                                                                                                                                                                                                             |                                                                                              |    | ✓   |                                                                          |
| 2a  | Do you observe evidence or do you have any prior knowledge that the <i>property</i> has been used for an industrial use in the past?                                                                                                                                                                                                                                     |                                                                                              | ✓  |     |                                                                          |
| 2b  | Did you observe evidence or do you have any prior knowledge that any <i>adjoining property</i> has been used for an industrial use in the past.                                                                                                                                                                                                                          |                                                                                              | ✓  |     |                                                                          |
| 3a  | Is the <i>property</i> used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility (if applicable, identify which)?                                                                                  |                                                                                              | ✓  |     |                                                                          |
| 3b  | Is any <i>adjoining property</i> used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility (if applicable, identify which)?                                                                        |                                                                                              | ✓  |     |                                                                          |
| 4a  | Did you observe evidence or do you have any knowledge that the <i>property</i> has been used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility (if applicable, identify which)?                 |                                                                                              | ✓  |     | Fields had been laser leveled in past. & benched.                        |
| 4b  | Did you observe evidence or do you have any prior knowledge that any <i>adjoining property</i> has been used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility (if applicable, identify which)? |                                                                                              | ✓  |     |                                                                          |

Please Return to GeoTek, Inc.  
kmchargue@geotekusa.com

1548 N. Maple St., Corona, CA 92585  
Phone: (951) 710-1160

# PROPERTY QUESTIONNAIRE

| No. | Question                                                                                                                                                                                                                                                                                                                                                   | Please indicate your response to each question.<br>("Unk" indicates a response of "unknown") |    |     |                                                                          |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|----|-----|--------------------------------------------------------------------------|
|     |                                                                                                                                                                                                                                                                                                                                                            | Yes                                                                                          | No | Unk | Please explain each affirmative or unknown answer in the space provided. |
| 5a  | Are there currently any damage or discarded automotive or industrial batteries, pesticides, paints, or other chemicals in individual containers of >5 gal (19L.) in volume or 50 gal (190 L.) in the aggregated, stored on or used at the <i>property</i> or at the facility?                                                                              |                                                                                              | ✓  |     |                                                                          |
| 5b  | Did you observe evidence or do you have any prior knowledge that there have been previously any damaged or discarded automotive or industrial batteries, or pesticides, paints, or other chemicals in individual containers of >5 gal (19 L.) in volume or 50 gal (190 L.) in the aggregated, stored on or used at the <i>property</i> or at the facility? |                                                                                              | ✓  |     | <i>Only Chemicals or material for farming.</i>                           |
| 6a  | Are there currently any industrial <i>drums</i> (typically 55-gal (208 L.)) or sacks of chemicals located on the property or at the facility?                                                                                                                                                                                                              |                                                                                              | ✓  |     |                                                                          |
| 6b  | Did you observe evidence or do you have prior knowledge that there have been previously any industrial <i>drums</i> (typically 55 gal (208 L.)) or sacks of chemicals on located on the property of at the facility?                                                                                                                                       |                                                                                              | ✓  |     |                                                                          |
| 7a  | Did you observe evidence or do you have prior knowledge that <i>fill dirt</i> that has been brought onto the property that originated from a contaminated site?                                                                                                                                                                                            |                                                                                              | ✓  |     |                                                                          |
| 7b  | Did you observe evidence or do you have prior knowledge that <i>fill dirt</i> that has been brought onto the property that is of an unknown origin?                                                                                                                                                                                                        |                                                                                              | ✓  |     |                                                                          |
| 8a  | Are there currently <i>pits, ponds, or lagoons</i> located on the <i>property</i> in connection with waste treatment or waste disposal?                                                                                                                                                                                                                    |                                                                                              | ✓  |     | <i>Only temporary ditches &amp; drains for farming.</i>                  |
| 8b  | Did you observe evidence or do you have prior knowledge that there have been previously, any <i>pits, ponds, or lagoons</i> located on the <i>property</i> in connection with waste treatment or waste disposal?                                                                                                                                           |                                                                                              | ✓  |     |                                                                          |
| 9a  | Is there currently any stained soil on the <i>property</i> ?                                                                                                                                                                                                                                                                                               |                                                                                              | ✓  |     |                                                                          |
| 9b  | Did you observe evidence or do you have prior knowledge that there has been previously, any stained soil on the <i>property</i> ?                                                                                                                                                                                                                          |                                                                                              | ✓  |     |                                                                          |

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kmchargue@geotekusa.com

1548 N. Maple St., Corona, CA 92585  
Phone: (951) 710-1160



## PROPERTY QUESTIONNAIRE

| No. | Question                                                                                                                                                                                                                                                                     | Please indicate your response to each question.<br>("Unk" indicates a response of "unknown") |    |     |                                                                          |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|----|-----|--------------------------------------------------------------------------|
|     |                                                                                                                                                                                                                                                                              | Yes                                                                                          | No | Unk | Please explain each affirmative or unknown answer in the space provided. |
| 10a | Are there any currently any registered or unregistered storage tanks (above or underground) located on the <i>property</i> ?                                                                                                                                                 |                                                                                              | ✓  |     |                                                                          |
| 10b | Did you observe evidence or do you have prior knowledge that there have been previously, any registered or unregistered storage tanks (above or underground) located on the <i>property</i> ?                                                                                | ✓                                                                                            |    |     | Small diesel tanks servicing AG Well.                                    |
| 11a | Are there currently any vent pipes, fill pipes, or access ways indicating a fill pipe protruding from the ground on the <i>property</i> or adjacent to any structure located on the <i>property</i> ?                                                                        | ✓                                                                                            |    |     | for Ag irrigation                                                        |
| 11b | Did you observe evidence or do you have prior knowledge that there have been previously, any vent pipes, fill pipes, or access ways indicating a fill pipe protruding from the ground on the <i>property</i> or adjacent to any structure located on the <i>property</i> ?   | ✓                                                                                            |    |     | Irrigation Pipeline                                                      |
| 12a | Is there currently evidence of leaks, spills or staining by substances other than water, or foul odors, associated with any flooring, drains, walls, ceilings, or exposed grounds on the <i>property</i> ?                                                                   |                                                                                              | ✓  |     |                                                                          |
| 12b | Did you observe evidence or do you have any prior knowledge that there have been previously any leaks, spills, or staining by substances other than water, or foul odors, associated with any flooring, drains, walls, ceilings, or exposed grounds on the <i>property</i> ? |                                                                                              | ✓  |     |                                                                          |
| 13a | If the property is served by a private well or non-public water system, is there evidence or do you have prior knowledge that contaminants have been identified in the well or system of that exceed guidelines applicable to the water system?                              |                                                                                              | ✓  |     |                                                                          |
| 13b | If the property is served by a private well or non-public system, is there evidence or do you have prior knowledge that the well has been designated a contaminated by any government environmental/health agency?                                                           |                                                                                              | ✓  |     |                                                                          |

# PROPERTY QUESTIONNAIRE

| No. | Question                                                                                                                                                                                                                                                                                                                                                           | Please indicate your response to each question.<br>("Unk" indicates a response of "unknown") |    |     |                                                                          |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|----|-----|--------------------------------------------------------------------------|
|     |                                                                                                                                                                                                                                                                                                                                                                    | Yes                                                                                          | No | Unk | Please explain each affirmative or unknown answer in the space provided. |
| 14  | Does the <i>owner</i> or <i>occupants</i> of the <i>property</i> have any knowledge of <i>environmental liens</i> or governmental notification relating to past or recurrent violations of environmental laws with respect to the <i>property</i> or any facility located on the <i>property</i> ?                                                                 |                                                                                              | ✓  |     |                                                                          |
| 15a | Has the <i>owner</i> or <i>occupant</i> of the <i>property</i> been informed of the past existence of <i>hazardous substances</i> or <i>petroleum products</i> with respect to the <i>property</i> or any facility located on the <i>property</i> ?                                                                                                                |                                                                                              | ✓  |     |                                                                          |
| 15b | Has the <i>owner</i> or <i>occupant</i> of the <i>property</i> been informed of the current existence of <i>hazardous substances</i> or <i>petroleum products</i> with respect to the <i>property</i> or any facility located on the <i>property</i> ?                                                                                                             |                                                                                              | ✓  |     |                                                                          |
| 15c | Has the <i>owner</i> or <i>occupant</i> of the <i>property</i> been informed of the past existence of environmental violations with respect to the <i>property</i> or any facility located on the <i>property</i> ?                                                                                                                                                |                                                                                              | ✓  |     |                                                                          |
| 15d | Has the <i>owner</i> or <i>occupant</i> of the <i>property</i> been informed of the current existence of environmental violations with respect to the <i>property</i> or any facility located on the <i>property</i> ?                                                                                                                                             |                                                                                              | ✓  |     |                                                                          |
| 16  | Does the <i>owner</i> or <i>occupant</i> of the <i>property</i> have any knowledge of any <i>environmental site assessments</i> of the <i>property</i> or facility that indicated the presence of <i>hazardous substances</i> or <i>petroleum products</i> on, or contamination of, the <i>property</i> or recommended further assessment of the <i>property</i> ? |                                                                                              | ✓  |     |                                                                          |
| 17  | Does the <i>owner</i> or <i>occupant</i> of the <i>property</i> know of any past, threatened, or pending lawsuits or administrative proceedings concerning a release or threatened release of any <i>hazardous substance</i> or <i>petroleum products</i> involving the <i>property</i> by any owner or occupant of the <i>property</i> ?                          |                                                                                              | ✓  |     |                                                                          |
| 18a | Does the <i>property</i> discharge waste water (not including sanitary waste or storm water) onto or adjacent to the property and/or into a storm water system?                                                                                                                                                                                                    |                                                                                              | ✓  |     | May have been historical drainage at South end.                          |

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# PROPERTY QUESTIONNAIRE

| No. | Question                                                                                                                                                                                                                                                                                           | Please indicate your response to each question.<br>("Unk" indicates a response of "unknown") |    |     |                                                                          |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|----|-----|--------------------------------------------------------------------------|
|     |                                                                                                                                                                                                                                                                                                    | Yes                                                                                          | No | Unk | Please explain each affirmative or unknown answer in the space provided. |
| 18b | Does the <i>property</i> discharge waste water (not including sanitary waste or storm water) onto or adjacent to the property and/or into a sanitary sewer system?                                                                                                                                 |                                                                                              | ✓  |     |                                                                          |
| 19  | Did you observe or do you have any knowledge that any <i>hazardous substances</i> or <i>petroleum products</i> , unidentified waste materials, tires, automotive or industrial batteries, or any other waste materials have been dumped above grade, buried and/or burned on the <i>property</i> ? |                                                                                              | ✓  |     |                                                                          |
| 20  | Is there a transformer, capacitor, or any hydraulic equipment for which there are any records indicating the presence of PCBs?                                                                                                                                                                     |                                                                                              | ✓  |     |                                                                          |
| 21a | Are there hydraulic elevators on the property?                                                                                                                                                                                                                                                     |                                                                                              | ✓  |     |                                                                          |
| 21b | Have the hydraulic elevators been tested within the past twelve months?                                                                                                                                                                                                                            |                                                                                              |    |     | N/A                                                                      |
| 21c | Are there available maintenance records for the hydraulic elevators?                                                                                                                                                                                                                               |                                                                                              |    |     | N/A                                                                      |
| 22a | Is there a Radiology installation located on this property?                                                                                                                                                                                                                                        |                                                                                              | ✓  |     |                                                                          |
| 22b | Does the Radiology installation use film?                                                                                                                                                                                                                                                          |                                                                                              |    |     | N/A                                                                      |
| 22c | Is the Radiology film disposed-of by a licensed recycler or disposal company?                                                                                                                                                                                                                      |                                                                                              |    |     | N/A                                                                      |
| 23a | Is there an emergency generator located on the property?                                                                                                                                                                                                                                           |                                                                                              | ✓  |     |                                                                          |
| 23b | Is the emergency generator fueled from aboveground or underground tanks?                                                                                                                                                                                                                           |                                                                                              |    |     | N/A                                                                      |
| 24  | Is there a Hematology facility located on the property?                                                                                                                                                                                                                                            |                                                                                              | ✓  |     |                                                                          |
| 25a | Is bulk medical gas stored on the property?                                                                                                                                                                                                                                                        |                                                                                              | ✓  |     |                                                                          |

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## USER QUESTIONNAIRE

### INTRODUCTION

In order to qualify for one of the *Landowner Liability Protections* offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2002, the *user* must provide the following information (if available) to the *environmental professional*. Failure to provide this information could result in a determination that “*all appropriate inquiry*” is not complete.

(1) Are you aware of any environmental cleanup liens against the property that are filed or recorded under federal, tribal, state or local law?

CIRCLE YES or ☒ NO

If yes, please explain in detail.

(2) Are you aware of any Act Use Limitations (AUL), such as *engineering controls*, land use restrictions or *institutional controls* that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state or local law?

YES or ☒ NO

If yes, please explain.

(3) As the *user* of this Environmental Site Assessment (ESA) do you have any specialized knowledge or familiarity related to the *property* or nearby properties? For example, are you involved in the same line of business as the current or former *occupants* of the *property* or its neighboring *property*, so that you may have specific knowledge of the chemicals and processes used by this type of business?

YES or ☒ NO

If yes, please explain.

(4) Does the purchase price being paid for this *property* reasonably reflect the fair market value of the *property*?

☒ YES or NO

If you believe that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the property?

YES or ☒ NO

If yes, please explain.

(5) Are you aware of commonly known or *reasonably* ascertainable information that would help the *environment professional* to identify conditions pinpointing releases or threaten releases of hazardous materials and/ or chemicals? For example, as user,

(a.) Do you know of any past uses of the *property*? YES or ☒ NO

(b.) Do you know of specific chemicals that are present or once were present at the *property*? YES or ☒ NO

(c.) Do you know of any chemical spills or any other chemical releases that have taken place at the *property*? YES or ☒ NO

(d.) Do you know of any environmental cleanups that have taken place at the *property*? YES or ☒ NO

If any yes, please explain.

(6) As the user of this Environmental Site Assessment (ESA), based on your knowledge and experience related to the *property* are there any *obvious* indicators that point to the presence or likely presence of contamination at the *property*?

YES or **NO**

If yes, please explain.

Completed By Gilbert Isaac Vazquez

Print Name

Gilbert Isaac Vazquez

Signature

6.6.24

Date

# **APPENDIX D**

## **PHOTOGRAPHS**

**PHOTOGRAPHS**  
**Tentative Tract Map No. 943**  
**Hanford, King County, California**



**1. View east, along Hanford Armona Road from northeast corner of Site.**



**2. View west, along Hanford Armona Road from northeast corner of Site.**



**PHOTOGRAPHS**  
**Tentative Tract Map No. 943**  
**Hanford, King County, California**



**3. View southwesterly, along Hanford Armona Road from northeast corner of Site.**



**4. View east from north portion of Site. Showing adjoining single-family development east of the Site.**



**PHOTOGRAPHS**  
**Tentative Tract Map No. 943**  
**Hanford, King County, California**





**PHOTOGRAPHS**  
**Tentative Tract Map No. 943**  
**Hanford, King County, California**





**PHOTOGRAPHS**  
**Tentative Tract Map No. 943**  
**Hanford, King County, California**





**PHOTOGRAPHS**  
**Tentative Tract Map No. 943**  
**Hanford, King County, California**



**11. Showing furniture debris and abandoned tires in southeast corner of Site.**



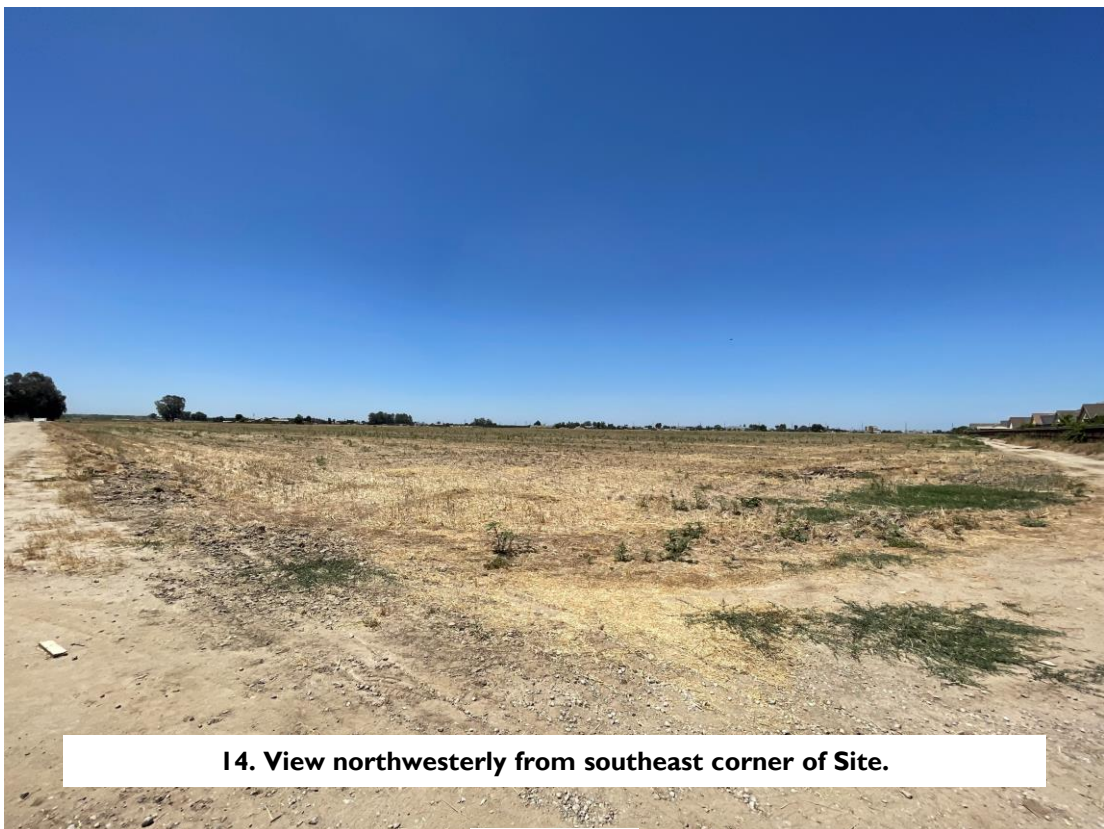
**12. Showing furniture debris in southeast corner of Site.**



**PHOTOGRAPHS**  
**Tentative Tract Map No. 943**  
**Hanford, King County, California**



**13. Showing furniture debris in southeast corner of Site.**



**14. View northwesterly from southeast corner of Site.**



**PHOTOGRAPHS**  
**Tentative Tract Map No. 943**  
**Hanford, King County, California**



**15. Showing furniture debris in south-central boundary of Site.**



**16. Showing debris in south boundary of Site.**

**PHOTOGRAPHS**  
**Tentative Tract Map No. 943**  
**Hanford, King County, California**



**17. View northeast from southwest boundary of Site. Showing water line pipe and wooden box.**



**18. View northwesterly from southwest boundary of Site.**



**PHOTOGRAPHS**  
**Tentative Tract Map No. 943**  
**Hanford, King County, California**





**PHOTOGRAPHS**  
**Tentative Tract Map No. 943**  
**Hanford, King County, California**



**21. View southwesterly from northwest boundary of Site.**



**22. View north from northwest boundary of Site. Showing adjoining vacant land to the northwest of the Site.**



**PHOTOGRAPHS**  
**Tentative Tract Map No. 943**  
**Hanford, King County, California**





**PHOTOGRAPHS**  
**Tentative Tract Map No. 943**  
**Hanford, King County, California**





**PHOTOGRAPHS**  
**Tentative Tract Map No. 943**  
**Hanford, King County, California**



**27. View easterly from northwest boundary of Site.**



**28. View southeasterly from northwest boundary of Site.**

**PHOTOGRAPHS**  
**Tentative Tract Map No. 943**  
**Hanford, King County, California**



# **APPENDIX E**

## **ENVIRONMENTAL DATABASE REPORT**

**VTTM 943**

Hanford Armona Road  
Hanford, CA 93230

Inquiry Number: 7674781.2s  
June 06, 2024

## The EDR Radius Map™ Report with GeoCheck®



6 Armstrong Road, 4th floor  
Shelton, CT 06484  
Toll Free: 800.352.0050  
[www.edrnet.com](http://www.edrnet.com)



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*Thank you for your business.*  
Please contact EDR at 1-800-352-0050  
with any questions or comments.

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## EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E1527 - 21), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E2247 - 16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E1528 - 22) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

### TARGET PROPERTY INFORMATION

#### ADDRESS

HANFORD ARMONA ROAD  
HANFORD, CA 93230

#### COORDINATES

|                                |                               |
|--------------------------------|-------------------------------|
| Latitude (North):              | 36.3099180 - 36° 18' 35.70"   |
| Longitude (West):              | 119.6800910 - 119° 40' 48.32" |
| Universal Transverse Mercator: | Zone 11                       |
| UTM X (Meters):                | 259366.2                      |
| UTM Y (Meters):                | 4021456.5                     |
| Elevation:                     | 243 ft. above sea level       |

### USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

|                      |                      |
|----------------------|----------------------|
| Target Property Map: | 50005774 HANFORD, CA |
| Version Date:        | 2021                 |

### AERIAL PHOTOGRAPHY IN THIS REPORT

|                         |          |
|-------------------------|----------|
| Portions of Photo from: | 20200705 |
| Source:                 | USDA     |

# MAPPED SITES SUMMARY

Target Property Address:  
HANFORD ARMONA ROAD  
HANFORD, CA 93230

Click on Map ID to see full detail.

| MAP ID             | SITE NAME            | ADDRESS             | DATABASE ACRONYMS                 | RELATIVE ELEVATION | DIST (ft. & mi.)<br>DIRECTION |
|--------------------|----------------------|---------------------|-----------------------------------|--------------------|-------------------------------|
| <a href="#">1</a>  | DAVID HERNANDEZ      | 1166 EDGEWOOD DR    | RCRA NonGen / NLR                 | Higher             | 331, 0.063, ENE               |
| <a href="#">2</a>  | GILLIAN GARDNER      | 1255 CLING CIRCLE   | RCRA NonGen / NLR                 | Higher             | 1029, 0.195, East             |
| <a href="#">3</a>  | DANNY FLOREZ         | 1083 WOODLAND DR    | RCRA NonGen / NLR                 | Higher             | 1132, 0.214, ENE              |
| <a href="#">4</a>  | WL WINTERBG FARM     | 12458 HANFORD DRIVE | HIST UST                          | Higher             | 1156, 0.219, NW               |
| <a href="#">5</a>  | CORNELIUS, BEN       | 11801 12TH AVENUE   | ENVIROSTOR                        | Higher             | 2362, 0.447, SE               |
| <a href="#">A6</a> | HIGHWAY PATROL HEADQ | 11050 13TH          | LUST, Cortese, HIST CORTESE, CERS | Lower              | 2462, 0.466, WNW              |
| <a href="#">A7</a> | HIGHWAY PATROL HEADQ | 11050 13TH AVE      | UST FINDER RELEASE                | Lower              | 2462, 0.466, WNW              |

## EXECUTIVE SUMMARY

### TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

### DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

### STANDARD ENVIRONMENTAL RECORDS

#### ***Lists of Federal NPL (Superfund) sites***

NPL..... National Priority List  
Proposed NPL..... Proposed National Priority List Sites  
NPL LIENS..... Federal Superfund Liens

#### ***Lists of Federal Delisted NPL sites***

Delisted NPL..... National Priority List Deletions

#### ***Lists of Federal sites subject to CERCLA removals and CERCLA orders***

FEDERAL FACILITY..... Federal Facility Site Information listing  
SEMS..... Superfund Enterprise Management System

#### ***Lists of Federal CERCLA sites with NFRAP***

SEMS-ARCHIVE..... Superfund Enterprise Management System Archive

#### ***Lists of Federal RCRA facilities undergoing Corrective Action***

CORRACTS..... Corrective Action Report

#### ***Lists of Federal RCRA TSD facilities***

RCRA-TSDF..... RCRA - Treatment, Storage and Disposal

#### ***Lists of Federal RCRA generators***

RCRA-LQG..... RCRA - Large Quantity Generators  
RCRA-SQG..... RCRA - Small Quantity Generators  
RCRA-VSQG..... RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

#### ***Federal institutional controls / engineering controls registries***

LUCIS..... Land Use Control Information System

## EXECUTIVE SUMMARY

US ENG CONTROLS..... Engineering Controls Sites List  
US INST CONTROLS..... Institutional Controls Sites List

### ***Federal ERNS list***

ERNS..... Emergency Response Notification System

### ***Lists of state- and tribal (Superfund) equivalent sites***

RESPONSE..... State Response Sites

### ***Lists of state and tribal landfills and solid waste disposal facilities***

SWF/LF..... Solid Waste Information System

### ***Lists of state and tribal leaking storage tanks***

INDIAN LUST..... Leaking Underground Storage Tanks on Indian Land  
CPS-SLIC..... Statewide SLIC Cases

### ***Lists of state and tribal registered storage tanks***

FEMA UST..... Underground Storage Tank Listing  
UST..... Active UST Facilities  
AST..... Aboveground Petroleum Storage Tank Facilities  
INDIAN UST..... Underground Storage Tanks on Indian Land

### ***Lists of state and tribal voluntary cleanup sites***

VCP..... Voluntary Cleanup Program Properties  
INDIAN VCP..... Voluntary Cleanup Priority Listing

### ***Lists of state and tribal brownfield sites***

BROWNFIELDS..... Considered Brownfields Sites Listing

## **ADDITIONAL ENVIRONMENTAL RECORDS**

### ***Local Brownfield lists***

US BROWNFIELDS..... A Listing of Brownfields Sites

### ***Local Lists of Landfill / Solid Waste Disposal Sites***

WMUDS/SWAT..... Waste Management Unit Database  
SWRCY..... Recycler Database  
HAULERS..... Registered Waste Tire Haulers Listing  
INDIAN ODI..... Report on the Status of Open Dumps on Indian Lands  
ODI..... Open Dump Inventory  
DEBRIS REGION 9..... Torres Martinez Reservation Illegal Dump Site Locations  
IHS OPEN DUMPS..... Open Dumps on Indian Land

### ***Local Lists of Hazardous waste / Contaminated Sites***

US HIST CDL..... Delisted National Clandestine Laboratory Register

## EXECUTIVE SUMMARY

|                     |                                                           |
|---------------------|-----------------------------------------------------------|
| HIST Cal-Sites..... | Historical Calsites Database                              |
| SCH.....            | School Property Evaluation Program                        |
| CDL.....            | Clandestine Drug Labs                                     |
| CERS HAZ WASTE..... | California Environmental Reporting System Hazardous Waste |
| Toxic Pits.....     | Toxic Pits Cleanup Act Sites                              |
| US CDL.....         | National Clandestine Laboratory Register                  |

### **Local Lists of Registered Storage Tanks**

|                 |                                                        |
|-----------------|--------------------------------------------------------|
| SWEEPS UST..... | SWEEPS UST Listing                                     |
| CERS TANKS..... | California Environmental Reporting System (CERS) Tanks |
| CA FID UST..... | Facility Inventory Database                            |

### **Local Land Records**

|              |                             |
|--------------|-----------------------------|
| LIENS.....   | Environmental Liens Listing |
| LIENS 2..... | CERCLA Lien Information     |
| DEED.....    | Deed Restriction Listing    |

### **Records of Emergency Release Reports**

|                |                                                      |
|----------------|------------------------------------------------------|
| HMIRS.....     | Hazardous Materials Information Reporting System     |
| CHMIRS.....    | California Hazardous Material Incident Report System |
| LDS.....       | Land Disposal Sites Listing                          |
| MCS.....       | Military Cleanup Sites Listing                       |
| SPILLS 90..... | SPILLS 90 data from FirstSearch                      |

### **Other Ascertainable Records**

|                       |                                                                                                                             |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------|
| FUDS.....             | Formerly Used Defense Sites                                                                                                 |
| DOD.....              | Department of Defense Sites                                                                                                 |
| SCRD DRYCLEANERS..... | State Coalition for Remediation of Drycleaners Listing                                                                      |
| US FIN ASSUR.....     | Financial Assurance Information                                                                                             |
| EPA WATCH LIST.....   | EPA WATCH LIST                                                                                                              |
| 2020 COR ACTION.....  | 2020 Corrective Action Program List                                                                                         |
| TSCA.....             | Toxic Substances Control Act                                                                                                |
| TRIS.....             | Toxic Chemical Release Inventory System                                                                                     |
| SSTS.....             | Section 7 Tracking Systems                                                                                                  |
| ROD.....              | Records Of Decision                                                                                                         |
| RMP.....              | Risk Management Plans                                                                                                       |
| RAATS.....            | RCRA Administrative Action Tracking System                                                                                  |
| PRP.....              | Potentially Responsible Parties                                                                                             |
| PADS.....             | PCB Activity Database System                                                                                                |
| ICIS.....             | Integrated Compliance Information System                                                                                    |
| FTTS.....             | FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act) |
| MLTS.....             | Material Licensing Tracking System                                                                                          |
| COAL ASH DOE.....     | Steam-Electric Plant Operation Data                                                                                         |
| COAL ASH EPA.....     | Coal Combustion Residues Surface Impoundments List                                                                          |
| PCB TRANSFORMER.....  | PCB Transformer Registration Database                                                                                       |
| RADINFO.....          | Radiation Information Database                                                                                              |
| HIST FTTS.....        | FIFRA/TSCA Tracking System Administrative Case Listing                                                                      |
| DOT OPS.....          | Incident and Accident Data                                                                                                  |
| CONSENT.....          | Superfund (CERCLA) Consent Decrees                                                                                          |
| INDIAN RESERV.....    | Indian Reservations                                                                                                         |

## EXECUTIVE SUMMARY

|                           |                                                            |
|---------------------------|------------------------------------------------------------|
| FUSRAP.....               | Formerly Utilized Sites Remedial Action Program            |
| UMTRA.....                | Uranium Mill Tailings Sites                                |
| LEAD SMELTERS.....        | Lead Smelter Sites                                         |
| US AIRS.....              | Aerometric Information Retrieval System Facility Subsystem |
| US MINES.....             | Mines Master Index File                                    |
| MINES MRDS.....           | Mineral Resources Data System                              |
| ABANDONED MINES.....      | Abandoned Mines                                            |
| FINDS.....                | Facility Index System/Facility Registry System             |
| DOCKET HWC.....           | Hazardous Waste Compliance Docket Listing                  |
| ECHO.....                 | Enforcement & Compliance History Information               |
| UXO.....                  | Unexploded Ordnance Sites                                  |
| FUELS PROGRAM.....        | EPA Fuels Program Registered Listing                       |
| PFAS NPL.....             | Superfund Sites with PFAS Detections Information           |
| PFAS FEDERAL SITES.....   | Federal Sites PFAS Information                             |
| PFAS TSCA.....            | PFAS Manufacture and Imports Information                   |
| PFAS TRIS.....            | List of PFAS Added to the TRI                              |
| PFAS RCRA MANIFEST.....   | PFAS Transfers Identified In the RCRA Database Listing     |
| PFAS ATSDR.....           | PFAS Contamination Site Location Listing                   |
| PFAS WQP.....             | Ambient Environmental Sampling for PFAS                    |
| PFAS NPDES.....           | Clean Water Act Discharge Monitoring Information           |
| PFAS ECHO.....            | Facilities in Industries that May Be Handling PFAS Listing |
| PFAS ECHO FIRE TRAIN..... | Facilities in Industries that May Be Handling PFAS Listing |
| PFAS PT 139 AIRPORT.....  | All Certified Part 139 Airports PFAS Information Listing   |
| AQUEOUS FOAM NRC.....     | Aqueous Foam Related Incidents Listing                     |
| BIOSOLIDS.....            | ICIS-NPDES Biosolids Facility Data                         |
| PFAS.....                 | PFAS Investigation Site Location Listing                   |
| AQUEOUS FOAM.....         | Former Fire Training Facility Assessments Listing          |
| CA BOND EXP. PLAN.....    | Bond Expenditure Plan                                      |
| CHROME PLATING.....       | Chrome Plating Facilities Listing                          |
| CUPA Listings.....        | CUPA Resources List                                        |
| DRYCLEANERS.....          | Cleaner Facilities                                         |
| EMI.....                  | Emissions Inventory Data                                   |
| ENF.....                  | Enforcement Action Listing                                 |
| Financial Assurance.....  | Financial Assurance Information Listing                    |
| ICE.....                  | Inspection, Compliance and Enforcement                     |
| HWP.....                  | EnviroStor Permitted Facilities Listing                    |
| HWT.....                  | Registered Hazardous Waste Transporter Database            |
| HWTS.....                 | Hazardous Waste Tracking System                            |
| HAZNET.....               | Facility and Manifest Data                                 |
| MINES.....                | Mines Site Location Listing                                |
| MWMP.....                 | Medical Waste Management Program Listing                   |
| NPDES.....                | NPDES Permits Listing                                      |
| PEST LIC.....             | Pesticide Regulation Licenses Listing                      |
| PROC.....                 | Certified Processors Database                              |
| Notify 65.....            | Proposition 65 Records                                     |
| HAZMAT.....               | Hazardous Material Facilities                              |
| UIC.....                  | UIC Listing                                                |
| UIC GEO.....              | UIC GEO (GEOTRACKER)                                       |
| WASTEWATER PITS.....      | Oil Wastewater Pits Listing                                |
| WDS.....                  | Waste Discharge System                                     |
| WIP.....                  | Well Investigation Program Case List                       |
| MILITARY PRIV SITES.....  | MILITARY PRIV SITES (GEOTRACKER)                           |
| PROJECT.....              | PROJECT (GEOTRACKER)                                       |
| WDR.....                  | Waste Discharge Requirements Listing                       |
| CIWQS.....                | California Integrated Water Quality System                 |

## EXECUTIVE SUMMARY

|                       |                                       |
|-----------------------|---------------------------------------|
| CERS.....             | CERS                                  |
| NON-CASE INFO.....    | NON-CASE INFO (GEOTRACKER)            |
| OTHER OIL GAS.....    | OTHER OIL & GAS (GEOTRACKER)          |
| PROD WATER PONDS..... | PROD WATER PONDS (GEOTRACKER)         |
| SAMPLING POINT.....   | SAMPLING POINT (GEOTRACKER)           |
| WELL STIM PROJ.....   | Well Stimulation Project (GEOTRACKER) |
| UST FINDER.....       | UST Finder Database                   |

### EDR HIGH RISK HISTORICAL RECORDS

#### ***EDR Exclusive Records***

|                       |                                         |
|-----------------------|-----------------------------------------|
| EDR MGP.....          | EDR Proprietary Manufactured Gas Plants |
| EDR Hist Auto.....    | EDR Exclusive Historical Auto Stations  |
| EDR Hist Cleaner..... | EDR Exclusive Historical Cleaners       |

### EDR RECOVERED GOVERNMENT ARCHIVES

#### ***Exclusive Recovered Govt. Archives***

|               |                                                               |
|---------------|---------------------------------------------------------------|
| RGA LF.....   | Recovered Government Archive Solid Waste Facilities List      |
| RGA LUST..... | Recovered Government Archive Leaking Underground Storage Tank |

### SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.

Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

### STANDARD ENVIRONMENTAL RECORDS

#### ***Lists of state- and tribal hazardous waste facilities***

ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifies sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the ENVIROSTOR list, as provided by EDR, and dated 01/22/2024 has revealed that there is



## EXECUTIVE SUMMARY

1 ENVIROSTOR site within approximately 1 mile of the target property.

| <u>Equal/Higher Elevation</u>                                   | <u>Address</u>    | <u>Direction / Distance</u> | <u>Map ID</u> | <u>Page</u> |
|-----------------------------------------------------------------|-------------------|-----------------------------|---------------|-------------|
| CORNELIUS, BEN<br>Facility Id: 16200007<br>Status: Refer: RWQCB | 11801 12TH AVENUE | SE 1/4 - 1/2 (0.447 mi.)    | 5             | 16          |

### ***Lists of state and tribal leaking storage tanks***

LUST: Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the LUST list, as provided by EDR, has revealed that there is 1 LUST site within approximately 0.5 miles of the target property.

| <u>Lower Elevation</u>                                                                                                                                                                                                                         | <u>Address</u>    | <u>Direction / Distance</u>      | <u>Map ID</u> | <u>Page</u> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------------------------|---------------|-------------|
| <b>HIGHWAY PATROL HEADQ</b><br>Database: LUST REG 5, Date of Government Version: 07/01/2008<br>Database: LUST, Date of Government Version: 03/04/2024<br>Status: Completed - Case Closed<br>Global Id: T0603100023<br>Status: Remediation Plan | <b>11050 13TH</b> | <b>WNW 1/4 - 1/2 (0.466 mi.)</b> | <b>A6</b>     | <b>17</b>   |

### **ADDITIONAL ENVIRONMENTAL RECORDS**

#### ***Local Lists of Registered Storage Tanks***

HIST UST: Historical UST Registered Database.

A review of the HIST UST list, as provided by EDR, and dated 10/15/1990 has revealed that there is 1 HIST UST site within approximately 0.25 miles of the target property.

| <u>Equal/Higher Elevation</u>                | <u>Address</u>      | <u>Direction / Distance</u> | <u>Map ID</u> | <u>Page</u> |
|----------------------------------------------|---------------------|-----------------------------|---------------|-------------|
| WL WINTERBG FARM<br>Facility Id: 00000022683 | 12458 HANFORD DRIVE | NW 1/8 - 1/4 (0.219 mi.)    | 4             | 15          |

#### ***Other Ascertainable Records***

RCRA NonGen / NLR: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 12/04/2023 has revealed that

## EXECUTIVE SUMMARY

there are 3 RCRA NonGen / NLR sites within approximately 0.25 miles of the target property.

| <u>Equal/Higher Elevation</u>            | <u>Address</u>    | <u>Direction / Distance</u> | <u>Map ID</u> | <u>Page</u> |
|------------------------------------------|-------------------|-----------------------------|---------------|-------------|
| DAVID HERNANDEZ<br>EPA ID:: CAC003047707 | 1166 EDGEWOOD DR  | ENE 0 - 1/8 (0.063 mi.)     | 1             | 9           |
| GILLIAN GARDNER<br>EPA ID:: CAC003223821 | 1255 CLING CIRCLE | E 1/8 - 1/4 (0.195 mi.)     | 2             | 11          |
| DANNY FLOREZ<br>EPA ID:: CAC002971005    | 1083 WOODLAND DR  | ENE 1/8 - 1/4 (0.214 mi.)   | 3             | 13          |

Cortese: The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

A review of the Cortese list, as provided by EDR, and dated 12/13/2023 has revealed that there is 1 Cortese site within approximately 0.5 miles of the target property.

| <u>Lower Elevation</u>                                                 | <u>Address</u>    | <u>Direction / Distance</u>      | <u>Map ID</u> | <u>Page</u> |
|------------------------------------------------------------------------|-------------------|----------------------------------|---------------|-------------|
| <b>HIGHWAY PATROL HEADQ</b><br>Cleanup Status: COMPLETED - CASE CLOSED | <b>11050 13TH</b> | <b>WNW 1/4 - 1/2 (0.466 mi.)</b> | <b>A6</b>     | <b>17</b>   |

HIST CORTESE: The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

A review of the HIST CORTESE list, as provided by EDR, and dated 04/01/2001 has revealed that there is 1 HIST CORTESE site within approximately 0.5 miles of the target property.

| <u>Lower Elevation</u>                            | <u>Address</u>    | <u>Direction / Distance</u>      | <u>Map ID</u> | <u>Page</u> |
|---------------------------------------------------|-------------------|----------------------------------|---------------|-------------|
| <b>HIGHWAY PATROL HEADQ</b><br>Reg Id: 5T16000022 | <b>11050 13TH</b> | <b>WNW 1/4 - 1/2 (0.466 mi.)</b> | <b>A6</b>     | <b>17</b>   |

UST FINDER RELEASE: US EPA's UST Finder data is a national composite of leaking underground storage tanks. This data contains information about, and locations of, leaking underground storage tanks. Data was collected from state sources and standardized into a national profile by EPA's Office of Underground Storage Tanks, Office of Research and Development, and the Association of State and Territorial Solid Waste Management Officials.

A review of the UST FINDER RELEASE list, as provided by EDR, and dated 06/08/2023 has revealed that there is 1 UST FINDER RELEASE site within approximately 0.5 miles of the target property.

| <u>Lower Elevation</u> | <u>Address</u> | <u>Direction / Distance</u> | <u>Map ID</u> | <u>Page</u> |
|------------------------|----------------|-----------------------------|---------------|-------------|
| HIGHWAY PATROL HEADQ   | 11050 13TH AVE | WNW 1/4 - 1/2 (0.466 mi.)   | A7            | 28          |

## EXECUTIVE SUMMARY

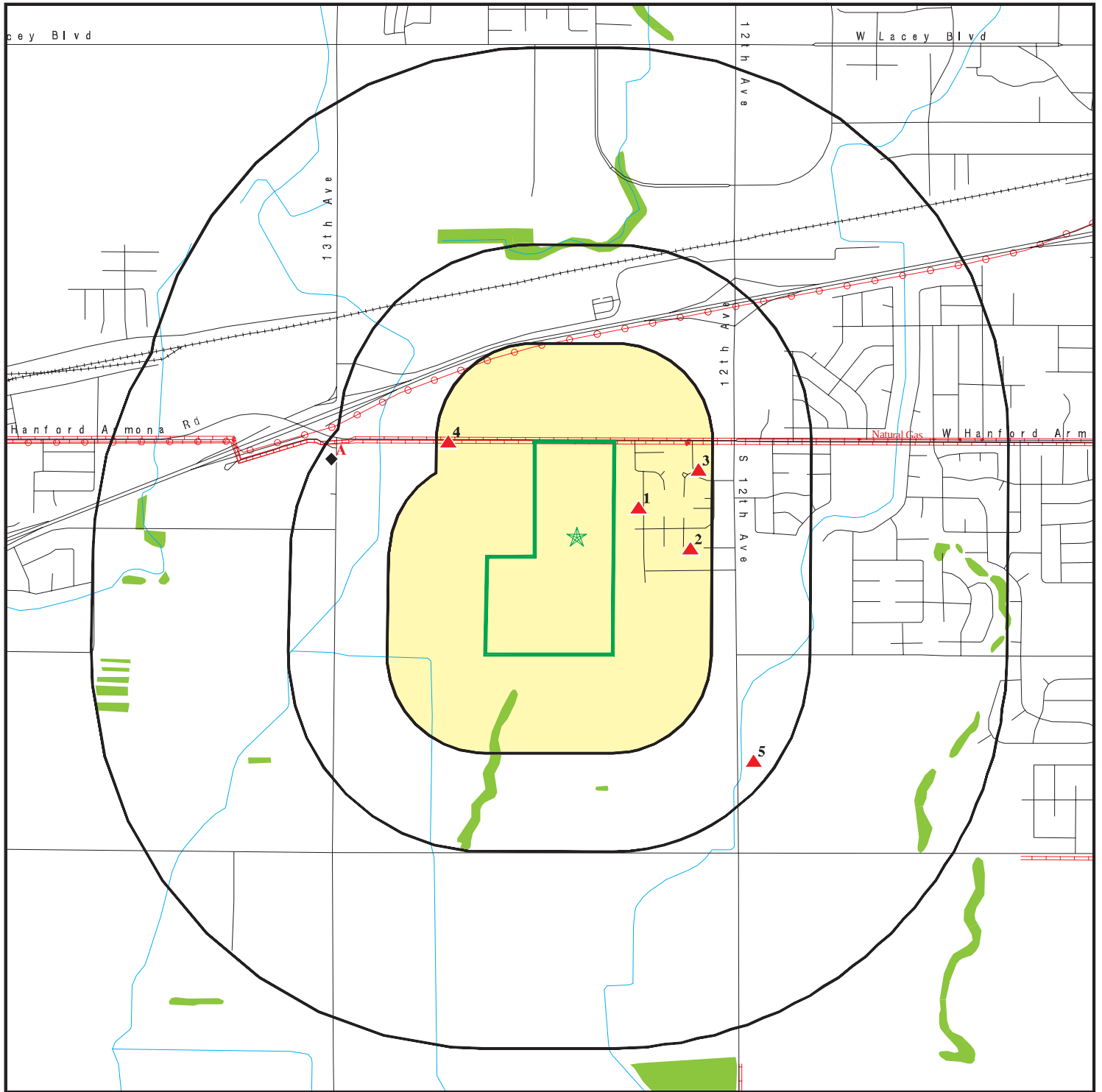
Due to poor or inadequate address information, the following sites were not mapped. Count: 1 records.

Site Name

Database(s)

CDL

# OVERVIEW MAP - 7674781.2S



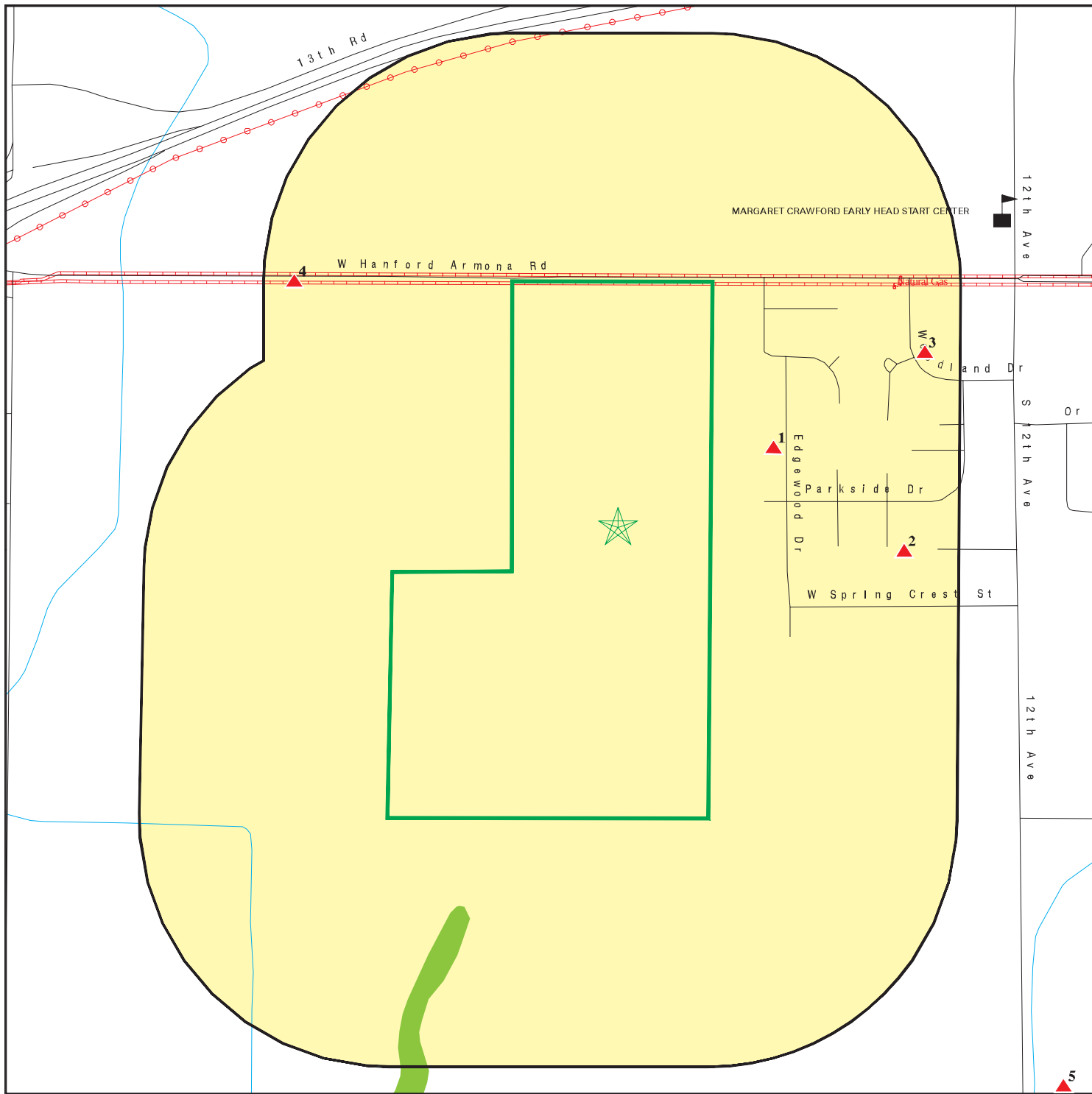
- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Pipelines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: VTTM 943  
 ADDRESS: Hanford Armona Road  
 Hanford CA 93230  
 LAT/LONG: 36.309918 / 119.680091

CLIENT: Geotek  
 CONTACT: Kyle Richard Mchargue  
 INQUIRY #: 7674781.2s  
 DATE: June 06, 2024 6:57 pm

# DETAIL MAP - 7674781.2S



- N** Target Property

- ▲ Sites at elevations higher than or equal to the target property
- ◆ Sites at elevations lower than the target property
- ⚙ Manufactured Gas Plants
- 🏠 Sensitive Receptors
- 🚨 National Priority List Sites
- 🛡 Dept. Defense Sites

-  Indian Reservations BIA
-  Power transmission lines
-  Pipelines
-  Special Flood Hazard Area (1%)
-  0.2% Annual Chance Flood Hazard
-  National Wetland Inventory
-  State Wetlands

-  Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: VTTM 943  
ADDRESS: Hanford Armona Road  
Hanford CA 93230  
LAT/LONG: 36.309918 / 119.680091

CLIENT: Geotek  
CONTACT: Kyle Richard Mchargue  
INQUIRY #: 7674781.2s  
DATE: June 06, 2024 6:58 pm

## MAP FINDINGS SUMMARY

| Database                                                                              | Search Distance (Miles) | Target Property | < 1/8 | 1/8 - 1/4 | 1/4 - 1/2 | 1/2 - 1 | > 1 | Total Plotted |
|---------------------------------------------------------------------------------------|-------------------------|-----------------|-------|-----------|-----------|---------|-----|---------------|
| <b>STANDARD ENVIRONMENTAL RECORDS</b>                                                 |                         |                 |       |           |           |         |     |               |
| <b><i>Lists of Federal NPL (Superfund) sites</i></b>                                  |                         |                 |       |           |           |         |     |               |
| NPL                                                                                   | 1.000                   |                 | 0     | 0         | 0         | 0       | NR  | 0             |
| Proposed NPL                                                                          | 1.000                   |                 | 0     | 0         | 0         | 0       | NR  | 0             |
| NPL LIENS                                                                             | 1.000                   |                 | 0     | 0         | 0         | 0       | NR  | 0             |
| <b><i>Lists of Federal Delisted NPL sites</i></b>                                     |                         |                 |       |           |           |         |     |               |
| Delisted NPL                                                                          | 1.000                   |                 | 0     | 0         | 0         | 0       | NR  | 0             |
| <b><i>Lists of Federal sites subject to CERCLA removals and CERCLA orders</i></b>     |                         |                 |       |           |           |         |     |               |
| FEDERAL FACILITY                                                                      | 0.500                   |                 | 0     | 0         | 0         | NR      | NR  | 0             |
| SEMS                                                                                  | 0.500                   |                 | 0     | 0         | 0         | NR      | NR  | 0             |
| <b><i>Lists of Federal CERCLA sites with NFRAP</i></b>                                |                         |                 |       |           |           |         |     |               |
| SEMS-ARCHIVE                                                                          | 0.500                   |                 | 0     | 0         | 0         | NR      | NR  | 0             |
| <b><i>Lists of Federal RCRA facilities undergoing Corrective Action</i></b>           |                         |                 |       |           |           |         |     |               |
| CORRACTS                                                                              | 1.000                   |                 | 0     | 0         | 0         | 0       | NR  | 0             |
| <b><i>Lists of Federal RCRA TSD facilities</i></b>                                    |                         |                 |       |           |           |         |     |               |
| RCRA-TSDF                                                                             | 0.500                   |                 | 0     | 0         | 0         | NR      | NR  | 0             |
| <b><i>Lists of Federal RCRA generators</i></b>                                        |                         |                 |       |           |           |         |     |               |
| RCRA-LQG                                                                              | 0.250                   |                 | 0     | 0         | NR        | NR      | NR  | 0             |
| RCRA-SQG                                                                              | 0.250                   |                 | 0     | 0         | NR        | NR      | NR  | 0             |
| RCRA-VSQG                                                                             | 0.250                   |                 | 0     | 0         | NR        | NR      | NR  | 0             |
| <b><i>Federal institutional controls / engineering controls registries</i></b>        |                         |                 |       |           |           |         |     |               |
| LUCIS                                                                                 | 0.500                   |                 | 0     | 0         | 0         | NR      | NR  | 0             |
| US ENG CONTROLS                                                                       | 0.500                   |                 | 0     | 0         | 0         | NR      | NR  | 0             |
| US INST CONTROLS                                                                      | 0.500                   |                 | 0     | 0         | 0         | NR      | NR  | 0             |
| <b><i>Federal ERNS list</i></b>                                                       |                         |                 |       |           |           |         |     |               |
| ERNS                                                                                  | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| <b><i>Lists of state- and tribal (Superfund) equivalent sites</i></b>                 |                         |                 |       |           |           |         |     |               |
| RESPONSE                                                                              | 1.000                   |                 | 0     | 0         | 0         | 0       | NR  | 0             |
| <b><i>Lists of state- and tribal hazardous waste facilities</i></b>                   |                         |                 |       |           |           |         |     |               |
| ENVIROSTOR                                                                            | 1.000                   |                 | 0     | 0         | 1         | 0       | NR  | 1             |
| <b><i>Lists of state and tribal landfills and solid waste disposal facilities</i></b> |                         |                 |       |           |           |         |     |               |
| SWF/LF                                                                                | 0.500                   |                 | 0     | 0         | 0         | NR      | NR  | 0             |

## MAP FINDINGS SUMMARY

| Database                                                           | Search Distance (Miles) | Target Property | < 1/8 | 1/8 - 1/4 | 1/4 - 1/2 | 1/2 - 1 | > 1 | Total Plotted |
|--------------------------------------------------------------------|-------------------------|-----------------|-------|-----------|-----------|---------|-----|---------------|
| <b><i>Lists of state and tribal leaking storage tanks</i></b>      |                         |                 |       |           |           |         |     |               |
| LUST                                                               | 0.500                   |                 | 0     | 0         | 1         | NR      | NR  | 1             |
| INDIAN LUST                                                        | 0.500                   |                 | 0     | 0         | 0         | NR      | NR  | 0             |
| CPS-SLIC                                                           | 0.500                   |                 | 0     | 0         | 0         | NR      | NR  | 0             |
| <b><i>Lists of state and tribal registered storage tanks</i></b>   |                         |                 |       |           |           |         |     |               |
| FEMA UST                                                           | 0.250                   |                 | 0     | 0         | NR        | NR      | NR  | 0             |
| UST                                                                | 0.250                   |                 | 0     | 0         | NR        | NR      | NR  | 0             |
| AST                                                                | 0.250                   |                 | 0     | 0         | NR        | NR      | NR  | 0             |
| INDIAN UST                                                         | 0.250                   |                 | 0     | 0         | NR        | NR      | NR  | 0             |
| <b><i>Lists of state and tribal voluntary cleanup sites</i></b>    |                         |                 |       |           |           |         |     |               |
| VCP                                                                | 0.500                   |                 | 0     | 0         | 0         | NR      | NR  | 0             |
| INDIAN VCP                                                         | 0.500                   |                 | 0     | 0         | 0         | NR      | NR  | 0             |
| <b><i>Lists of state and tribal brownfield sites</i></b>           |                         |                 |       |           |           |         |     |               |
| BROWNFIELDS                                                        | 0.500                   |                 | 0     | 0         | 0         | NR      | NR  | 0             |
| <b><u>ADDITIONAL ENVIRONMENTAL RECORDS</u></b>                     |                         |                 |       |           |           |         |     |               |
| <b><i>Local Brownfield lists</i></b>                               |                         |                 |       |           |           |         |     |               |
| US BROWNFIELDS                                                     | 0.500                   |                 | 0     | 0         | 0         | NR      | NR  | 0             |
| <b><i>Local Lists of Landfill / Solid Waste Disposal Sites</i></b> |                         |                 |       |           |           |         |     |               |
| WMUDS/SWAT                                                         | 0.500                   |                 | 0     | 0         | 0         | NR      | NR  | 0             |
| SWRCY                                                              | 0.500                   |                 | 0     | 0         | 0         | NR      | NR  | 0             |
| HAULERS                                                            | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| INDIAN ODI                                                         | 0.500                   |                 | 0     | 0         | 0         | NR      | NR  | 0             |
| ODI                                                                | 0.500                   |                 | 0     | 0         | 0         | NR      | NR  | 0             |
| DEBRIS REGION 9                                                    | 0.500                   |                 | 0     | 0         | 0         | NR      | NR  | 0             |
| IHS OPEN DUMPS                                                     | 0.500                   |                 | 0     | 0         | 0         | NR      | NR  | 0             |
| <b><i>Local Lists of Hazardous waste / Contaminated Sites</i></b>  |                         |                 |       |           |           |         |     |               |
| US HIST CDL                                                        | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| HIST Cal-Sites                                                     | 1.000                   |                 | 0     | 0         | 0         | 0       | NR  | 0             |
| SCH                                                                | 0.250                   |                 | 0     | 0         | NR        | NR      | NR  | 0             |
| CDL                                                                | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| CERS HAZ WASTE                                                     | 0.250                   |                 | 0     | 0         | NR        | NR      | NR  | 0             |
| Toxic Pits                                                         | 1.000                   |                 | 0     | 0         | 0         | 0       | NR  | 0             |
| US CDL                                                             | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| <b><i>Local Lists of Registered Storage Tanks</i></b>              |                         |                 |       |           |           |         |     |               |
| SWEEPS UST                                                         | 0.250                   |                 | 0     | 0         | NR        | NR      | NR  | 0             |
| HIST UST                                                           | 0.250                   |                 | 0     | 1         | NR        | NR      | NR  | 1             |
| CERS TANKS                                                         | 0.250                   |                 | 0     | 0         | NR        | NR      | NR  | 0             |
| CA FID UST                                                         | 0.250                   |                 | 0     | 0         | NR        | NR      | NR  | 0             |
| <b><i>Local Land Records</i></b>                                   |                         |                 |       |           |           |         |     |               |
| LIENS                                                              | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |

## MAP FINDINGS SUMMARY

| Database                                    | Search Distance (Miles) | Target Property | < 1/8 | 1/8 - 1/4 | 1/4 - 1/2 | 1/2 - 1 | > 1 | Total Plotted |
|---------------------------------------------|-------------------------|-----------------|-------|-----------|-----------|---------|-----|---------------|
| LIENS 2                                     | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| DEED                                        | 0.500                   |                 | 0     | 0         | 0         | NR      | NR  | 0             |
| <b>Records of Emergency Release Reports</b> |                         |                 |       |           |           |         |     |               |
| HMIRS                                       | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| CHMIRS                                      | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| LDS                                         | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| MCS                                         | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| SPILLS 90                                   | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| <b>Other Ascertainable Records</b>          |                         |                 |       |           |           |         |     |               |
| RCRA NonGen / NLR                           | 0.250                   |                 | 1     | 2         | NR        | NR      | NR  | 3             |
| FUDS                                        | 1.000                   |                 | 0     | 0         | 0         | 0       | NR  | 0             |
| DOD                                         | 1.000                   |                 | 0     | 0         | 0         | 0       | NR  | 0             |
| SCRD DRYCLEANERS                            | 0.500                   |                 | 0     | 0         | 0         | NR      | NR  | 0             |
| US FIN ASSUR                                | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| EPA WATCH LIST                              | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| 2020 COR ACTION                             | 0.250                   |                 | 0     | 0         | NR        | NR      | NR  | 0             |
| TSCA                                        | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| TRIS                                        | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| SSTS                                        | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| ROD                                         | 1.000                   |                 | 0     | 0         | 0         | 0       | NR  | 0             |
| RMP                                         | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| RAATS                                       | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| PRP                                         | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| PADS                                        | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| ICIS                                        | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| FTTS                                        | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| MLTS                                        | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| COAL ASH DOE                                | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| COAL ASH EPA                                | 0.500                   |                 | 0     | 0         | 0         | NR      | NR  | 0             |
| PCB TRANSFORMER                             | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| RADINFO                                     | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| HIST FTTS                                   | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| DOT OPS                                     | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| CONSENT                                     | 1.000                   |                 | 0     | 0         | 0         | 0       | NR  | 0             |
| INDIAN RESERV                               | 1.000                   |                 | 0     | 0         | 0         | 0       | NR  | 0             |
| FUSRAP                                      | 1.000                   |                 | 0     | 0         | 0         | 0       | NR  | 0             |
| UMTRA                                       | 0.500                   |                 | 0     | 0         | 0         | NR      | NR  | 0             |
| LEAD SMELTERS                               | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| US AIRS                                     | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| US MINES                                    | 0.250                   |                 | 0     | 0         | NR        | NR      | NR  | 0             |
| MINES MRDS                                  | 0.250                   |                 | 0     | 0         | NR        | NR      | NR  | 0             |
| ABANDONED MINES                             | 0.250                   |                 | 0     | 0         | NR        | NR      | NR  | 0             |
| FINDS                                       | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| DOCKET HWC                                  | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| ECHO                                        | 0.001                   |                 | 0     | NR        | NR        | NR      | NR  | 0             |
| UXO                                         | 1.000                   |                 | 0     | 0         | 0         | 0       | NR  | 0             |
| FUELS PROGRAM                               | 0.250                   |                 | 0     | 0         | NR        | NR      | NR  | 0             |
| PFAS NPL                                    | 0.250                   |                 | 0     | 0         | NR        | NR      | NR  | 0             |
| PFAS FEDERAL SITES                          | 0.250                   |                 | 0     | 0         | NR        | NR      | NR  | 0             |



## MAP FINDINGS SUMMARY

| Database             | Search<br>Distance<br>(Miles) | Target<br>Property | < 1/8 | 1/8 - 1/4 | 1/4 - 1/2 | 1/2 - 1 | > 1 | Total<br>Plotted |
|----------------------|-------------------------------|--------------------|-------|-----------|-----------|---------|-----|------------------|
| PFAS TSCA            | 0.250                         |                    | 0     | 0         | NR        | NR      | NR  | 0                |
| PFAS TRIS            | 0.250                         |                    | 0     | 0         | NR        | NR      | NR  | 0                |
| PFAS RCRA MANIFEST   | 0.250                         |                    | 0     | 0         | NR        | NR      | NR  | 0                |
| PFAS ATSDR           | 0.250                         |                    | 0     | 0         | NR        | NR      | NR  | 0                |
| PFAS WQP             | 0.250                         |                    | 0     | 0         | NR        | NR      | NR  | 0                |
| PFAS NPDES           | 0.250                         |                    | 0     | 0         | NR        | NR      | NR  | 0                |
| PFAS ECHO            | 0.250                         |                    | 0     | 0         | NR        | NR      | NR  | 0                |
| PFAS ECHO FIRE TRAIN | 0.250                         |                    | 0     | 0         | NR        | NR      | NR  | 0                |
| PFAS PT 139 AIRPORT  | 0.250                         |                    | 0     | 0         | NR        | NR      | NR  | 0                |
| AQUEOUS FOAM NRC     | 0.250                         |                    | 0     | 0         | NR        | NR      | NR  | 0                |
| BIOSOLIDS            | 0.001                         |                    | 0     | NR        | NR        | NR      | NR  | 0                |
| PFAS                 | 0.250                         |                    | 0     | 0         | NR        | NR      | NR  | 0                |
| AQUEOUS FOAM         | 0.250                         |                    | 0     | 0         | NR        | NR      | NR  | 0                |
| CA BOND EXP. PLAN    | 1.000                         |                    | 0     | 0         | 0         | 0       | NR  | 0                |
| CHROME PLATING       | 0.500                         |                    | 0     | 0         | 0         | NR      | NR  | 0                |
| Cortese              | 0.500                         |                    | 0     | 0         | 1         | NR      | NR  | 1                |
| CUPA Listings        | 0.250                         |                    | 0     | 0         | NR        | NR      | NR  | 0                |
| DRYCLEANERS          | 0.250                         |                    | 0     | 0         | NR        | NR      | NR  | 0                |
| EMI                  | 0.001                         |                    | 0     | NR        | NR        | NR      | NR  | 0                |
| ENF                  | 0.001                         |                    | 0     | NR        | NR        | NR      | NR  | 0                |
| Financial Assurance  | 0.001                         |                    | 0     | NR        | NR        | NR      | NR  | 0                |
| ICE                  | 0.001                         |                    | 0     | NR        | NR        | NR      | NR  | 0                |
| HIST CORTESE         | 0.500                         |                    | 0     | 0         | 1         | NR      | NR  | 1                |
| HWP                  | 1.000                         |                    | 0     | 0         | 0         | 0       | NR  | 0                |
| HWT                  | 0.250                         |                    | 0     | 0         | NR        | NR      | NR  | 0                |
| HWTS                 | 0.001                         |                    | 0     | NR        | NR        | NR      | NR  | 0                |
| HAZNET               | 0.001                         |                    | 0     | NR        | NR        | NR      | NR  | 0                |
| MINES                | 0.250                         |                    | 0     | 0         | NR        | NR      | NR  | 0                |
| MWMP                 | 0.250                         |                    | 0     | 0         | NR        | NR      | NR  | 0                |
| NPDES                | 0.001                         |                    | 0     | NR        | NR        | NR      | NR  | 0                |
| PEST LIC             | 0.001                         |                    | 0     | NR        | NR        | NR      | NR  | 0                |
| PROC                 | 0.500                         |                    | 0     | 0         | 0         | NR      | NR  | 0                |
| Notify 65            | 1.000                         |                    | 0     | 0         | 0         | 0       | NR  | 0                |
| HAZMAT               | 0.250                         |                    | 0     | 0         | NR        | NR      | NR  | 0                |
| UIC                  | 0.001                         |                    | 0     | NR        | NR        | NR      | NR  | 0                |
| UIC GEO              | 0.001                         |                    | 0     | NR        | NR        | NR      | NR  | 0                |
| WASTEWATER PITS      | 0.500                         |                    | 0     | 0         | 0         | NR      | NR  | 0                |
| WDS                  | 0.001                         |                    | 0     | NR        | NR        | NR      | NR  | 0                |
| WIP                  | 0.250                         |                    | 0     | 0         | NR        | NR      | NR  | 0                |
| MILITARY PRIV SITES  | 0.001                         |                    | 0     | NR        | NR        | NR      | NR  | 0                |
| PROJECT              | 0.001                         |                    | 0     | NR        | NR        | NR      | NR  | 0                |
| WDR                  | 0.001                         |                    | 0     | NR        | NR        | NR      | NR  | 0                |
| CIWQS                | 0.001                         |                    | 0     | NR        | NR        | NR      | NR  | 0                |
| CERS                 | 0.001                         |                    | 0     | NR        | NR        | NR      | NR  | 0                |
| NON-CASE INFO        | 0.001                         |                    | 0     | NR        | NR        | NR      | NR  | 0                |
| OTHER OIL GAS        | 0.001                         |                    | 0     | NR        | NR        | NR      | NR  | 0                |
| PROD WATER PONDS     | 0.001                         |                    | 0     | NR        | NR        | NR      | NR  | 0                |
| SAMPLING POINT       | 0.001                         |                    | 0     | NR        | NR        | NR      | NR  | 0                |
| WELL STIM PROJ       | 0.001                         |                    | 0     | NR        | NR        | NR      | NR  | 0                |
| UST FINDER           | 0.250                         |                    | 0     | 0         | NR        | NR      | NR  | 0                |
| UST FINDER RELEASE   | 0.500                         |                    | 0     | 0         | 1         | NR      | NR  | 1                |

## MAP FINDINGS SUMMARY

| <u>Database</u>                                  | <u>Search<br/>Distance<br/>(Miles)</u> | <u>Target<br/>Property</u> | <u>&lt; 1/8</u> | <u>1/8 - 1/4</u> | <u>1/4 - 1/2</u> | <u>1/2 - 1</u> | <u>&gt; 1</u> | <u>Total<br/>Plotted</u> |
|--------------------------------------------------|----------------------------------------|----------------------------|-----------------|------------------|------------------|----------------|---------------|--------------------------|
| <b><u>EDR HIGH RISK HISTORICAL RECORDS</u></b>   |                                        |                            |                 |                  |                  |                |               |                          |
| <b><i>EDR Exclusive Records</i></b>              |                                        |                            |                 |                  |                  |                |               |                          |
| EDR MGP                                          | 1.000                                  |                            | 0               | 0                | 0                | 0              | NR            | 0                        |
| EDR Hist Auto                                    | 0.125                                  |                            | 0               | NR               | NR               | NR             | NR            | 0                        |
| EDR Hist Cleaner                                 | 0.125                                  |                            | 0               | NR               | NR               | NR             | NR            | 0                        |
| <b><u>EDR RECOVERED GOVERNMENT ARCHIVES</u></b>  |                                        |                            |                 |                  |                  |                |               |                          |
| <b><i>Exclusive Recovered Govt. Archives</i></b> |                                        |                            |                 |                  |                  |                |               |                          |
| RGA LF                                           | 0.001                                  |                            | 0               | NR               | NR               | NR             | NR            | 0                        |
| RGA LUST                                         | 0.001                                  |                            | 0               | NR               | NR               | NR             | NR            | 0                        |
| - Totals --                                      |                                        | 0                          | 1               | 3                | 5                | 0              | 0             | 9                        |

### NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

|           |                                                    |                           |              |
|-----------|----------------------------------------------------|---------------------------|--------------|
| 1         | DAVID HERNANDEZ                                    | RCRA NonGen / NLR         | 1026041571   |
| ENE       | 1166 EDGEWOOD DR                                   |                           | CAC003047707 |
| < 1/8     | HANFORD, CA 93230                                  |                           |              |
| 0.063 mi. |                                                    |                           |              |
| 331 ft.   |                                                    |                           |              |
| Relative: | RCRA Listings:                                     |                           |              |
| Higher    | Date Form Received by Agency:                      | 20191218                  |              |
|           | Handler Name:                                      | David Hernandez           |              |
|           | Handler Address:                                   | 1166 Edgewood Dr          |              |
|           | Handler City,State,Zip:                            | HANFORD, CA 93230-5723    |              |
|           | EPA ID:                                            | CAC003047707              |              |
|           | Contact Name:                                      | DAVID HERNANDEZ           |              |
|           | Contact Address:                                   | 1166 EDGEWOOD DR          |              |
|           | Contact City,State,Zip:                            | HANFORD, CA 93230-5723    |              |
|           | Contact Telephone:                                 | 559-530-1897              |              |
|           | Contact Fax:                                       | Not reported              |              |
|           | Contact Email:                                     | VALERIEO@CVECORG.COM      |              |
|           | Contact Title:                                     | Not reported              |              |
|           | EPA Region:                                        | 09                        |              |
|           | Land Type:                                         | Not reported              |              |
|           | Federal Waste Generator Description:               | Not a generator, verified |              |
|           | Non-Notifier:                                      | Not reported              |              |
|           | Biennial Report Cycle:                             | Not reported              |              |
|           | Accessibility:                                     | Not reported              |              |
|           | Active Site Indicator:                             | Not reported              |              |
|           | State District Owner:                              | Not reported              |              |
|           | State District:                                    | Not reported              |              |
|           | Mailing Address:                                   | 1166 EDGEWOOD DR          |              |
|           | Mailing City,State,Zip:                            | HANFORD, CA 93230-5723    |              |
|           | Owner Name:                                        | David Hernandez           |              |
|           | Owner Type:                                        | Other                     |              |
|           | Operator Name:                                     | David Hernandez           |              |
|           | Operator Type:                                     | Other                     |              |
|           | Short-Term Generator Activity:                     | No                        |              |
|           | Importer Activity:                                 | No                        |              |
|           | Mixed Waste Generator:                             | No                        |              |
|           | Transporter Activity:                              | No                        |              |
|           | Transfer Facility Activity:                        | No                        |              |
|           | Recycler Activity with Storage:                    | No                        |              |
|           | Small Quantity On-Site Burner Exemption:           | No                        |              |
|           | Smelting Melting and Refining Furnace Exemption:   | No                        |              |
|           | Underground Injection Control:                     | No                        |              |
|           | Off-Site Waste Receipt:                            | No                        |              |
|           | Universal Waste Indicator:                         | No                        |              |
|           | Universal Waste Destination Facility:              | No                        |              |
|           | Federal Universal Waste:                           | No                        |              |
|           | Active Site State-Reg Handler:                     | ---                       |              |
|           | Federal Facility Indicator:                        | Not reported              |              |
|           | Hazardous Secondary Material Indicator:            | N                         |              |
|           | Sub-Part K Indicator:                              | Not reported              |              |
|           | 2018 GPRA Permit Baseline:                         | Not on the Baseline       |              |
|           | 2018 GPRA Renewals Baseline:                       | Not on the Baseline       |              |
|           | 202 GPRA Corrective Action Baseline:               | No                        |              |
|           | Subject to Corrective Action Universe:             | No                        |              |
|           | Non-TSDFs Where RCRA CA has Been Imposed Universe: | No                        |              |
|           | Corrective Action Priority Ranking:                | No NCAPS ranking          |              |
|           | Environmental Control Indicator:                   | No                        |              |
|           | Institutional Control Indicator:                   | No                        |              |

Map ID  
Direction  
Distance  
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number  
EPA ID Number

**DAVID HERNANDEZ (Continued)**

**1026041571**

|                                                               |              |
|---------------------------------------------------------------|--------------|
| Human Exposure Controls Indicator:                            | N/A          |
| Groundwater Controls Indicator:                               | N/A          |
| Significant Non-Complier Universe:                            | No           |
| Unaddressed Significant Non-Complier Universe:                | No           |
| Addressed Significant Non-Complier Universe:                  | No           |
| Significant Non-Complier With a Compliance Schedule Universe: | No           |
| Financial Assurance Required:                                 | Not reported |
| Handler Date of Last Change:                                  | 20200210     |
| Recognized Trader-Importer:                                   | No           |
| Recognized Trader-Exporter:                                   | No           |
| Importer of Spent Lead Acid Batteries:                        | No           |
| Exporter of Spent Lead Acid Batteries:                        | No           |
| Recycler Activity Without Storage:                            | No           |
| Manifest Broker:                                              | No           |
| Sub-Part P Indicator:                                         | No           |

**Handler - Owner Operator:**

|                                |                        |
|--------------------------------|------------------------|
| Owner/Operator Indicator:      | Owner                  |
| Owner/Operator Name:           | DAVID HERNANDEZ        |
| Legal Status:                  | Other                  |
| Date Became Current:           | Not reported           |
| Date Ended Current:            | Not reported           |
| Owner/Operator Address:        | 1166 EDGEWOOD DR       |
| Owner/Operator City,State,Zip: | HANFORD, CA 93230-5723 |
| Owner/Operator Telephone:      | 559-530-1897           |
| Owner/Operator Telephone Ext:  | Not reported           |
| Owner/Operator Fax:            | Not reported           |
| Owner/Operator Email:          | Not reported           |

|                                |                        |
|--------------------------------|------------------------|
| Owner/Operator Indicator:      | Operator               |
| Owner/Operator Name:           | DAVID HERNANDEZ        |
| Legal Status:                  | Other                  |
| Date Became Current:           | Not reported           |
| Date Ended Current:            | Not reported           |
| Owner/Operator Address:        | 1166 EDGEWOOD DR       |
| Owner/Operator City,State,Zip: | HANFORD, CA 93230-5723 |
| Owner/Operator Telephone:      | 559-530-1897           |
| Owner/Operator Telephone Ext:  | Not reported           |
| Owner/Operator Fax:            | Not reported           |
| Owner/Operator Email:          | Not reported           |

**Historic Generators:**

|                                            |                           |
|--------------------------------------------|---------------------------|
| Receive Date:                              | 20191218                  |
| Handler Name:                              | DAVID HERNANDEZ           |
| Federal Waste Generator Description:       | Not a generator, verified |
| State District Owner:                      | Not reported              |
| Large Quantity Handler of Universal Waste: | No                        |
| Recognized Trader Importer:                | No                        |
| Recognized Trader Exporter:                | No                        |
| Spent Lead Acid Battery Importer:          | No                        |
| Spent Lead Acid Battery Exporter:          | No                        |
| Current Record:                            | Yes                       |
| Non Storage Recycler Activity:             | Not reported              |
| Electronic Manifest Broker:                | Not reported              |

Map ID  
Direction  
Distance  
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number  
EPA ID Number

**DAVID HERNANDEZ (Continued)**

**1026041571**

List of NAICS Codes and Descriptions:

NAICS Code: 56299

NAICS Description: ALL OTHER WASTE MANAGEMENT SERVICES

Facility Has Received Notices of Violations:

Violations: No Violations Found

Evaluation Action Summary:

Evaluations: No Evaluations Found

**2**  
**East**  
**1/8-1/4**  
**0.195 mi.**  
**1029 ft.**

**GILLIAN GARDNER**  
**1255 CLING CIRCLE**  
**HANFORD, CA 93230**

**RCRA NonGen / NLR**

**1027681994**  
**CAC003223821**

**Relative:**  
**Higher**

**Actual:**  
**243 ft.**

RCRA Listings:

|                                                  |                              |
|--------------------------------------------------|------------------------------|
| Date Form Received by Agency:                    | 20230322                     |
| Handler Name:                                    | Gillian Gardner              |
| Handler Address:                                 | 1255 Cling Circle            |
| Handler City,State,Zip:                          | HANFORD, CA 93230            |
| EPA ID:                                          | CAC003223821                 |
| Contact Name:                                    | GILLIAN GARDNER              |
| Contact Address:                                 | 1255 CLING CIRCLE            |
| Contact City,State,Zip:                          | HANFORD, CA 93230            |
| Contact Telephone:                               | 559-267-3309                 |
| Contact Fax:                                     | Not reported                 |
| Contact Email:                                   | JDAVIS@PARCENVIRONMENTAL.COM |
| Contact Title:                                   | Not reported                 |
| EPA Region:                                      | 09                           |
| Land Type:                                       | Not reported                 |
| Federal Waste Generator Description:             | Not a generator, verified    |
| Non-Notifier:                                    | Not reported                 |
| Biennial Report Cycle:                           | Not reported                 |
| Accessibility:                                   | Not reported                 |
| Active Site Indicator:                           | Not reported                 |
| State District Owner:                            | Not reported                 |
| State District:                                  | Not reported                 |
| Mailing Address:                                 | 1255 CLING CIRCLE            |
| Mailing City,State,Zip:                          | HANFORD, CA 93230            |
| Owner Name:                                      | Gillian Gardner              |
| Owner Type:                                      | Other                        |
| Operator Name:                                   | Gillian Gardner              |
| Operator Type:                                   | Other                        |
| Short-Term Generator Activity:                   | No                           |
| Importer Activity:                               | No                           |
| Mixed Waste Generator:                           | No                           |
| Transporter Activity:                            | No                           |
| Transfer Facility Activity:                      | No                           |
| Recycler Activity with Storage:                  | No                           |
| Small Quantity On-Site Burner Exemption:         | No                           |
| Smelting Melting and Refining Furnace Exemption: | No                           |
| Underground Injection Control:                   | No                           |
| Off-Site Waste Receipt:                          | No                           |
| Universal Waste Indicator:                       | No                           |

Map ID  
Direction  
Distance  
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number  
EPA ID Number

**GILLIAN GARDNER (Continued)**

**1027681994**

|                                                               |                     |
|---------------------------------------------------------------|---------------------|
| Universal Waste Destination Facility:                         | No                  |
| Federal Universal Waste:                                      | No                  |
| Active Site State-Reg Handler:                                | ---                 |
| Federal Facility Indicator:                                   | Not reported        |
| Hazardous Secondary Material Indicator:                       | N                   |
| Sub-Part K Indicator:                                         | Not reported        |
| 2018 GPRA Permit Baseline:                                    | Not on the Baseline |
| 2018 GPRA Renewals Baseline:                                  | Not on the Baseline |
| 202 GPRA Corrective Action Baseline:                          | No                  |
| Subject to Corrective Action Universe:                        | No                  |
| Non-TSDFs Where RCRA CA has Been Imposed Universe:            | No                  |
| Corrective Action Priority Ranking:                           | No NCAPS ranking    |
| Environmental Control Indicator:                              | No                  |
| Institutional Control Indicator:                              | No                  |
| Human Exposure Controls Indicator:                            | N/A                 |
| Groundwater Controls Indicator:                               | N/A                 |
| Significant Non-Complier Universe:                            | No                  |
| Unaddressed Significant Non-Complier Universe:                | No                  |
| Addressed Significant Non-Complier Universe:                  | No                  |
| Significant Non-Complier With a Compliance Schedule Universe: | No                  |
| Financial Assurance Required:                                 | Not reported        |
| Handler Date of Last Change:                                  | 20230323            |
| Recognized Trader-Importer:                                   | No                  |
| Recognized Trader-Exporter:                                   | No                  |
| Importer of Spent Lead Acid Batteries:                        | No                  |
| Exporter of Spent Lead Acid Batteries:                        | No                  |
| Recycler Activity Without Storage:                            | No                  |
| Manifest Broker:                                              | No                  |
| Sub-Part P Indicator:                                         | No                  |

**Handler - Owner Operator:**

|                                      |                   |
|--------------------------------------|-------------------|
| Owner/Operator Indicator:            | Owner             |
| Owner/Operator Name: GILLIAN GARDNER |                   |
| Legal Status:                        | Other             |
| Date Became Current:                 | Not reported      |
| Date Ended Current:                  | Not reported      |
| Owner/Operator Address:              | 1255 CLING CIRCLE |
| Owner/Operator City,State,Zip:       | HANFORD, CA 93230 |
| Owner/Operator Telephone:            | 559-267-3309      |
| Owner/Operator Telephone Ext:        | Not reported      |
| Owner/Operator Fax:                  | Not reported      |
| Owner/Operator Email:                | Not reported      |

|                                      |                   |
|--------------------------------------|-------------------|
| Owner/Operator Indicator:            | Operator          |
| Owner/Operator Name: GILLIAN GARDNER |                   |
| Legal Status:                        | Other             |
| Date Became Current:                 | Not reported      |
| Date Ended Current:                  | Not reported      |
| Owner/Operator Address:              | 1255 CLING CIRCLE |
| Owner/Operator City,State,Zip:       | HANFORD, CA 93230 |
| Owner/Operator Telephone:            | 559-267-3309      |
| Owner/Operator Telephone Ext:        | Not reported      |
| Owner/Operator Fax:                  | Not reported      |
| Owner/Operator Email:                | Not reported      |

Map ID  
Direction  
Distance  
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number  
EPA ID Number

**GILLIAN GARDNER (Continued)**

**1027681994**

Historic Generators:

|                                            |                           |
|--------------------------------------------|---------------------------|
| Receive Date:                              | 20230322                  |
| Handler Name:                              | GILLIAN GARDNER           |
| Federal Waste Generator Description:       | Not a generator, verified |
| State District Owner:                      | Not reported              |
| Large Quantity Handler of Universal Waste: | No                        |
| Recognized Trader Importer:                | No                        |
| Recognized Trader Exporter:                | No                        |
| Spent Lead Acid Battery Importer:          | No                        |
| Spent Lead Acid Battery Exporter:          | No                        |
| Current Record:                            | Yes                       |
| Non Storage Recycler Activity:             | No                        |
| Electronic Manifest Broker:                | No                        |

List of NAICS Codes and Descriptions:

|                    |                                     |
|--------------------|-------------------------------------|
| NAICS Code:        | 56299                               |
| NAICS Description: | ALL OTHER WASTE MANAGEMENT SERVICES |

Facility Has Received Notices of Violations:

|             |                     |
|-------------|---------------------|
| Violations: | No Violations Found |
|-------------|---------------------|

Evaluation Action Summary:

|              |                      |
|--------------|----------------------|
| Evaluations: | No Evaluations Found |
|--------------|----------------------|

**3**  
**ENE**  
**1/8-1/4**  
**0.214 mi.**  
**1132 ft.**

**DANNY FLOREZ**  
**1083 WOODLAND DR**  
**HANFORD, CA 93230**

**RCRA NonGen / NLR** **1024751213**  
**CAC002971005**

**Relative:**  
**Higher**  
**Actual:**  
**243 ft.**

RCRA Listings:

|                                      |                           |
|--------------------------------------|---------------------------|
| Date Form Received by Agency:        | 20180716                  |
| Handler Name:                        | Danny Florez              |
| Handler Address:                     | 1083 Woodland Dr          |
| Handler City,State,Zip:              | HANFORD, CA 93230         |
| EPA ID:                              | CAC002971005              |
| Contact Name:                        | DANNY FLOREZ              |
| Contact Address:                     | 219 N DOUTY ST            |
| Contact City,State,Zip:              | HANFORD, CA 93230         |
| Contact Telephone:                   | 559-362-9530              |
| Contact Fax:                         | Not reported              |
| Contact Email:                       | LIZE@PWSEI.COM            |
| Contact Title:                       | Not reported              |
| EPA Region:                          | 09                        |
| Land Type:                           | Not reported              |
| Federal Waste Generator Description: | Not a generator, verified |
| Non-Notifier:                        | Not reported              |
| Biennial Report Cycle:               | Not reported              |
| Accessibility:                       | Not reported              |
| Active Site Indicator:               | Handler Activities        |
| State District Owner:                | Not reported              |
| State District:                      | Not reported              |
| Mailing Address:                     | 219 N DOUTY ST            |
| Mailing City,State,Zip:              | HANFORD, CA 93230         |
| Owner Name:                          | Danny Florez              |

Map ID  
Direction  
Distance  
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number  
EPA ID Number

**DANNY FLOREZ (Continued)**

**1024751213**

|                                                               |                     |
|---------------------------------------------------------------|---------------------|
| Owner Type:                                                   | Other               |
| Operator Name:                                                | Danny Florez        |
| Operator Type:                                                | Other               |
| Short-Term Generator Activity:                                | No                  |
| Importer Activity:                                            | No                  |
| Mixed Waste Generator:                                        | No                  |
| Transporter Activity:                                         | No                  |
| Transfer Facility Activity:                                   | No                  |
| Recycler Activity with Storage:                               | No                  |
| Small Quantity On-Site Burner Exemption:                      | No                  |
| Smelting Melting and Refining Furnace Exemption:              | No                  |
| Underground Injection Control:                                | No                  |
| Off-Site Waste Receipt:                                       | No                  |
| Universal Waste Indicator:                                    | Yes                 |
| Universal Waste Destination Facility:                         | Yes                 |
| Federal Universal Waste:                                      | No                  |
| Active Site State-Reg Handler:                                | ---                 |
| Federal Facility Indicator:                                   | Not reported        |
| Hazardous Secondary Material Indicator:                       | N                   |
| Sub-Part K Indicator:                                         | Not reported        |
| 2018 GPRA Permit Baseline:                                    | Not on the Baseline |
| 2018 GPRA Renewals Baseline:                                  | Not on the Baseline |
| 202 GPRA Corrective Action Baseline:                          | No                  |
| Subject to Corrective Action Universe:                        | No                  |
| Non-TSDFs Where RCRA CA has Been Imposed Universe:            | No                  |
| Corrective Action Priority Ranking:                           | No NCAPS ranking    |
| Environmental Control Indicator:                              | No                  |
| Institutional Control Indicator:                              | No                  |
| Human Exposure Controls Indicator:                            | N/A                 |
| Groundwater Controls Indicator:                               | N/A                 |
| Significant Non-Complier Universe:                            | No                  |
| Unaddressed Significant Non-Complier Universe:                | No                  |
| Addressed Significant Non-Complier Universe:                  | No                  |
| Significant Non-Complier With a Compliance Schedule Universe: | No                  |
| Financial Assurance Required:                                 | Not reported        |
| Handler Date of Last Change:                                  | 20180831            |
| Recognized Trader-Importer:                                   | No                  |
| Recognized Trader-Exporter:                                   | No                  |
| Importer of Spent Lead Acid Batteries:                        | No                  |
| Exporter of Spent Lead Acid Batteries:                        | No                  |
| Recycler Activity Without Storage:                            | No                  |
| Manifest Broker:                                              | No                  |
| Sub-Part P Indicator:                                         | No                  |

**Handler - Owner Operator:**

|                                   |                   |
|-----------------------------------|-------------------|
| Owner/Operator Indicator:         | Owner             |
| Owner/Operator Name: DANNY FLOREZ |                   |
| Legal Status:                     | Other             |
| Date Became Current:              | Not reported      |
| Date Ended Current:               | Not reported      |
| Owner/Operator Address:           | 219 N DOUTY ST    |
| Owner/Operator City,State,Zip:    | HANFORD, CA 93230 |
| Owner/Operator Telephone:         | 559-362-9530      |
| Owner/Operator Telephone Ext:     | Not reported      |
| Owner/Operator Fax:               | Not reported      |
| Owner/Operator Email:             | Not reported      |



Map ID  
Direction  
Distance  
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number  
EPA ID Number

**DANNY FLOREZ (Continued)**

**1024751213**

Owner/Operator Indicator: Operator  
Owner/Operator Name: DANNY FLOREZ  
Legal Status: Other  
Date Became Current: Not reported  
Date Ended Current: Not reported  
Owner/Operator Address: 219 N DOUTY ST  
Owner/Operator City,State,Zip: HANFORD, CA 93230  
Owner/Operator Telephone: 559-362-9530  
Owner/Operator Telephone Ext: Not reported  
Owner/Operator Fax: Not reported  
Owner/Operator Email: Not reported

Historic Generators:

Receive Date: 20180716  
Handler Name: DANNY FLOREZ  
Federal Waste Generator Description: Not a generator, verified  
State District Owner: Not reported  
Large Quantity Handler of Universal Waste: No  
Recognized Trader Importer: No  
Recognized Trader Exporter: No  
Spent Lead Acid Battery Importer: No  
Spent Lead Acid Battery Exporter: No  
Current Record: Yes  
Non Storage Recycler Activity: Not reported  
Electronic Manifest Broker: Not reported

List of NAICS Codes and Descriptions:

NAICS Code: 56299  
NAICS Description: ALL OTHER WASTE MANAGEMENT SERVICES

Facility Has Received Notices of Violations:

Violations: No Violations Found

Evaluation Action Summary:

Evaluations: No Evaluations Found

**4**  
**NW**  
**1/8-1/4**  
**0.219 mi.**  
**1156 ft.**

**WL WINTERBG FARM**  
**12458 HANFORD DRIVE**  
**HANFORD, CA 93230**

**HIST UST** **U001581696**  
**N/A**

**Relative:**  
**Higher**

HIST UST:

**Actual:**  
**243 ft.**

Name: WL WINTERBG FARM  
Address: 12458 HANFORD DRIVE  
City,State,Zip: HANFORD, CA 93230  
File Number: 00025797  
URL: <https://documents.geotracker.waterboards.ca.gov/ustpdfs/pdf/00025797.pdf>  
Region: STATE  
Facility ID: 00000022683  
Facility Type: Other  
Other Type: FARM  
Contact Name: Not reported  
Telephone: 2095820926  
Owner Name: W.L. WINTERBERG

Map ID  
Direction  
Distance  
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number  
EPA ID Number

**WL WINTERBG FARM (Continued)**

**U001581696**

Owner Address: 12501 LACY  
Owner City,St,Zip: HANFORD, CA 93230  
Total Tanks: 0001  
  
Tank Num: 001  
Container Num: 0000000001  
Year Installed: Not reported  
Tank Capacity: 00000550  
Tank Used for: PRODUCT  
Type of Fuel: REGULAR  
Container Construction Thickness: Not reported  
Leak Detection: Stock Inventor

[Click here for Geo Tracker PDF:](#)

**5**  
**SE**  
**1/4-1/2**  
**0.447 mi.**  
**2362 ft.**

**CORNELIUS, BEN**  
**11801 12TH AVENUE**  
**HANFORD, CA 93230**

**ENVIROSTOR** **S100180507**  
**N/A**

**Relative:**  
**Higher**

**Actual:**  
**243 ft.**

ENVIROSTOR:  
Name: CORNELIUS, BEN  
Address: 11801 12TH AVENUE  
City,State,Zip: HANFORD, CA 93230  
Facility ID: 16200007  
Status: Refer: RWQCB  
Status Date: 06/26/1995  
Site Code: Not reported  
Site Type: Historical  
Site Type Detailed: \* Historical  
Acres: Not reported  
NPL: NO  
Regulatory Agencies: NONE SPECIFIED  
Lead Agency: NONE SPECIFIED  
Program Manager: Not reported  
Supervisor: Referred - Not Assigned  
Division Branch: Cleanup Sacramento  
Assembly: 33  
Senate: 16  
Special Program: Not reported  
Restricted Use: NO  
Site Mgmt Req: NONE SPECIFIED  
Funding: Not reported  
Latitude: 36.30174  
Longitude: -119.6720  
APN: NONE SPECIFIED  
Past Use: NONE SPECIFIED  
Potential COC: NONE SPECIFIED  
Confirmed COC: NONE SPECIFIED  
Potential Description: NONE SPECIFIED  
Alias Name: BEN CORNELIUS  
Alias Type: Alternate Name  
Alias Name: CORNELIUS RANCH  
Alias Type: Alternate Name  
Alias Name: 16200007  
Alias Type: Envirostor ID Number

Map ID  
Direction  
Distance  
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number  
EPA ID Number

**CORNELIUS, BEN (Continued)**

**S100180507**

Completed Info:

Completed Area Name: PROJECT WIDE  
Completed Sub Area Name: Not reported  
Completed Document Type: Site Screening  
Completed Date: 11/29/1989  
Comments: SITE SCREENING DONE SOAP STALK WASTE IS CLASSIFIED AS HAZ- ARDOUS WASTE BASED ON THE AQUATIC FISH BIOASSAY TEST. RECOMMEND MEDIUM PRIOR- ITY PRELIMINARY ENDANGERMENT ASSESSMENT

Completed Area Name: PROJECT WIDE  
Completed Sub Area Name: Not reported  
Completed Document Type: \* Discovery  
Completed Date: 03/23/1987  
Comments: FACILITY IDENTIFIED DHS, SURVEILLANCE AND ENFORCEMENT UNIT: COMPLAINT - WASTE STORED IN UNLINED POND

Future Area Name: Not reported  
Future Sub Area Name: Not reported  
Future Document Type: Not reported  
Future Due Date: Not reported  
Schedule Area Name: Not reported  
Schedule Sub Area Name: Not reported  
Schedule Document Type: Not reported  
Schedule Due Date: Not reported  
Schedule Revised Date: Not reported

**A6**  
**WNW**  
**1/4-1/2**  
**0.466 mi.**  
**2462 ft.**  
**HIGHWAY PATROL HEADQUARTE**  
**11050 13TH**  
**HANFORD, CA 93230**  
**Site 1 of 2 in cluster A**

**LUST**  
**Cortese**  
**HIST CORTESE**  
**CERS**  
**S101295374**  
**N/A**

**Relative:**  
**Lower**

**Actual:**  
**240 ft.**

**LUST:**

Name: HIGHWAY PATROL HEADQUARTERS  
Address: 11050 13TH AVE  
City,State,Zip: HANFORD, CA 93230  
Lead Agency: CENTRAL VALLEY RWQCB (REGION 5F)  
Case Type: LUST Cleanup Site  
Geo Track: [http://geotracker.waterboards.ca.gov/profile\\_report.asp?global\\_id=T0603100023](http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0603100023)  
Global Id: T0603100023  
Latitude: 36.312504869298  
Longitude: -119.691375152779  
Status: Completed - Case Closed  
Status Date: 05/19/2016  
Case Worker: MLE  
RB Case Number: 5T16000022  
Local Agency: KINGS COUNTY  
File Location: Regional Board  
Local Case Number: Not reported  
Potential Media Affect: Aquifer used for drinking water supply  
Potential Contaminants of Concern: Gasoline  
EPA Region: 9  
Coordinate Source: Google Map Move  
Cuf Case: NO  
Quantity Released Gallons: Not reported  
Begin Date: 12/05/1986  
Leak Reported Date: 12/19/1986

Map ID  
Direction  
Distance  
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number  
EPA ID Number

**HIGHWAY PATROL HEADQUARTE (Continued)**

**S101295374**

|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| How Discovered:                | Tank Closure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| How Discovered Description:    | Not reported                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Discharge Source:              | Tank                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Discharge Cause:               | Physc / Mech Damage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Stop Method:                   | Not reported                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Stop Description:              | Not reported                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| No Further Action Date:        | 05/19/2016                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| CA Water Watershed Name:       | South Valley Floor - Hanford-Lemoore (551.90)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Dwr Groundwater Subbasin Name: | San Joaquin Valley - Tulare Lake (5-022.12)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Disadvantaged Community:       | Not reported                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| CA Enviroscreen 3 Score:       | 91-95%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| CA Enviroscreen 4 Score:       | 85-90%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Military DOD Site:             | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Facility Project Subtype:      | Not reported                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| RWQCB Region:                  | CENTRAL VALLEY RWQCB (REGION 5F)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Site History:                  | <p>The subject property (Site) is currently occupied by a vacant building which previously served as a California Highway Patrol (CHP) headquarters. The Site is not within the service area of a public water system. There is a domestic water supply well onsite, and four domestic wells and one irrigation well within 1,000 feet of the Site. The nearest surface water body is a distributary of the Last Chance Ditch, approximately 650 feet east of the Site. Groundwater was measured at between 25 and 28 feet below ground surface (bgs) on 8 May 2015, and is estimated to flow primarily southeast. In December 1986 a leaking 12,000-gallon underground storage tank (UST), was removed. Analysis of soil and groundwater samples collected at that time indicated that petroleum product constituents had been released into the subsurface soil and groundwater. On 19 December 1986 the Kings County Health Department (KCHD) issued a report establishing a Leaking UST (LUST) case. The KCHD referred the case to the Central Valley Water Board on 5 January 1987. Subsurface soil investigation conducted from June 1987 to July 1989 determined that petroleum product constituents migrated laterally from the former UST location, to include an area estimated to be at least 9,600 square feet within the southeast portion of the Site. The majority of the impacted soil was between a depth of 10 feet bgs and the groundwater surface. The maximum estimated mass of petroleum product constituents within the soil was equivalent to approximately 12,000 pounds of gasoline or about 1,950 gallons. In July 1989 soil excavation was conducted at the Site which removed approximately 600 cubic yards of petroleum product impacted soil, estimated to have contained approximately 2,500 pounds of gasoline. In April 1991 a soil vapor extraction (SVE) system with three SVE wells was operated for a total of 82 days. The SVE operation removed approximately 9,300 pounds of gasoline vapors from the soil and groundwater. The remediation efforts have removed approximately 98% of the estimated total petroleum product constituents that were present in the subsurface. A series nineteen of groundwater monitoring wells were installed on the Site and the adjacent properties, between June 1987 and January 2015. Groundwater monitoring has been ongoing at the Site since May 1989, with the most recent sampling conducted in May 2015. Early in the monitoring effort, free product was observed in three onsite monitoring wells, but the last time it was observed was during the January 1992 sampling event. The analytical results from the groundwater samples have shown a general decrease in petroleum product constituent concentrations in all the wells since December 1993. The analytical results confirm that the groundwater plume is either stable or</p> |

Map ID  
Direction  
Distance  
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number  
EPA ID Number

**HIGHWAY PATROL HEADQUARTE (Continued)**

**S101295374**

decreasing in areal extent. Petroleum constituents that remain in soil and groundwater beneath the Site should continue to degrade naturally, and pose no significant threat to human health and safety, the environment or groundwater quality in the area of the Site. On 1 May 2012, the State Water Resources Control Board (State Board) adopted the Low-Threat Underground Storage Tank Case Closure Policy, (Policy). The Policy is limited to areas with available public water systems. Case closure outside areas with public water systems are to be evaluated based upon the fundamental framework and principles contained in the Policy. Based on the evaluation outlined above, this case meets the fundamental framework and principles of the Policy, and closure is warranted.

**LUST:**

Global Id: T0603100023  
Contact Type: Regional Board Caseworker - Primary Caseworker  
Contact Name: MICHEALE EASLEY  
Organization Name: CENTRAL VALLEY RWQCB (REGION 5F)  
Address: 1685 E Street  
City: FRESNO  
Email: micheale.easley@waterboards.ca.gov  
Phone Number: 5594884391

Global Id: T0603100023  
Contact Type: Local Agency Caseworker  
Contact Name: PATZER, SUSAN E.  
Organization Name: KINGS COUNTY  
Address: Not reported  
City: r5 UNKNOWN  
Email: Not reported  
Phone Number: Not reported

**LUST:**

Global Id: T0603100023  
Action Type: ENFORCEMENT  
Date: 09/09/2002  
Action: File review

Global Id: T0603100023  
Action Type: ENFORCEMENT  
Date: 11/21/2002  
Action: File review

Global Id: T0603100023  
Action Type: ENFORCEMENT  
Date: 02/08/2002  
Action: File review

Global Id: T0603100023  
Action Type: ENFORCEMENT  
Date: 10/29/2009  
Action: Staff Letter

Global Id: T0603100023  
Action Type: ENFORCEMENT  
Date: 12/21/2009  
Action: Technical Correspondence / Assistance / Other

Map ID  
Direction  
Distance  
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number  
EPA ID Number

**HIGHWAY PATROL HEADQUARTE (Continued)**

**S101295374**

Global Id: T0603100023  
Action Type: ENFORCEMENT  
Date: 10/01/2014  
Action: Site Visit / Inspection / Sampling

Global Id: T0603100023  
Action Type: Other  
Date: 12/15/1986  
Action: Leak Discovery

Global Id: T0603100023  
Action Type: RESPONSE  
Date: 08/12/2002  
Action: Monitoring Report - Quarterly

Global Id: T0603100023  
Action Type: RESPONSE  
Date: 05/29/2006  
Action: Other Report / Document

Global Id: T0603100023  
Action Type: RESPONSE  
Date: 10/11/2007  
Action: Other Workplan

Global Id: T0603100023  
Action Type: ENFORCEMENT  
Date: 11/28/2007  
Action: Staff Letter

Global Id: T0603100023  
Action Type: ENFORCEMENT  
Date: 11/09/2006  
Action: Staff Letter

Global Id: T0603100023  
Action Type: ENFORCEMENT  
Date: 02/20/2007  
Action: Warning Letter

Global Id: T0603100023  
Action Type: ENFORCEMENT  
Date: 01/16/2007  
Action: Staff Letter

Global Id: T0603100023  
Action Type: ENFORCEMENT  
Date: 04/18/2007  
Action: Staff Letter

Global Id: T0603100023  
Action Type: ENFORCEMENT  
Date: 01/14/2014  
Action: Staff Letter

Global Id: T0603100023  
Action Type: ENFORCEMENT

Map ID  
Direction  
Distance  
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number  
EPA ID Number

**HIGHWAY PATROL HEADQUARTE (Continued)**

**S101295374**

|              |                                               |
|--------------|-----------------------------------------------|
| Date:        | 07/25/2014                                    |
| Action:      | Staff Letter                                  |
| Global Id:   | T0603100023                                   |
| Action Type: | ENFORCEMENT                                   |
| Date:        | 12/02/2015                                    |
| Action:      | Staff Letter                                  |
| Global Id:   | T0603100023                                   |
| Action Type: | Other                                         |
| Date:        | 12/19/1986                                    |
| Action:      | Leak Reported                                 |
| Global Id:   | T0603100023                                   |
| Action Type: | RESPONSE                                      |
| Date:        | 08/12/2002                                    |
| Action:      | Monitoring Report - Quarterly                 |
| Global Id:   | T0603100023                                   |
| Action Type: | RESPONSE                                      |
| Date:        | 08/12/2002                                    |
| Action:      | Monitoring Report - Quarterly                 |
| Global Id:   | T0603100023                                   |
| Action Type: | RESPONSE                                      |
| Date:        | 12/13/2005                                    |
| Action:      | Other Workplan                                |
| Global Id:   | T0603100023                                   |
| Action Type: | RESPONSE                                      |
| Date:        | 01/22/2007                                    |
| Action:      | Corrective Action Plan / Remedial Action Plan |
| Global Id:   | T0603100023                                   |
| Action Type: | RESPONSE                                      |
| Date:        | 03/01/2016                                    |
| Action:      | Well Destruction Report                       |
| Global Id:   | T0603100023                                   |
| Action Type: | ENFORCEMENT                                   |
| Date:        | 05/10/2006                                    |
| Action:      | Staff Letter                                  |
| Global Id:   | T0603100023                                   |
| Action Type: | ENFORCEMENT                                   |
| Date:        | 07/18/2007                                    |
| Action:      | Staff Letter                                  |
| Global Id:   | T0603100023                                   |
| Action Type: | ENFORCEMENT                                   |
| Date:        | 04/25/2006                                    |
| Action:      | Staff Letter                                  |
| Global Id:   | T0603100023                                   |
| Action Type: | ENFORCEMENT                                   |
| Date:        | 07/17/2006                                    |
| Action:      | Staff Letter                                  |

Map ID  
Direction  
Distance  
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number  
EPA ID Number

**HIGHWAY PATROL HEADQUARTE (Continued)**

**S101295374**

|              |                                    |
|--------------|------------------------------------|
| Global Id:   | T0603100023                        |
| Action Type: | ENFORCEMENT                        |
| Date:        | 08/30/2006                         |
| Action:      | Site Visit / Inspection / Sampling |
| Global Id:   | T0603100023                        |
| Action Type: | ENFORCEMENT                        |
| Date:        | 08/03/2006                         |
| Action:      | Warning Letter                     |
| Global Id:   | T0603100023                        |
| Action Type: | ENFORCEMENT                        |
| Date:        | 06/30/2011                         |
| Action:      | Staff Letter                       |
| Global Id:   | T0603100023                        |
| Action Type: | ENFORCEMENT                        |
| Date:        | 11/13/2013                         |
| Action:      | Staff Letter                       |
| Global Id:   | T0603100023                        |
| Action Type: | ENFORCEMENT                        |
| Date:        | 05/19/2016                         |
| Action:      | Closure/No Further Action Letter   |
| Global Id:   | T0603100023                        |
| Action Type: | Other                              |
| Date:        | 12/05/1986                         |
| Action:      | Leak Stopped                       |
| Global Id:   | T0603100023                        |
| Action Type: | RESPONSE                           |
| Date:        | 02/02/2006                         |
| Action:      | Monitoring Report - Quarterly      |
| Global Id:   | T0603100023                        |
| Action Type: | RESPONSE                           |
| Date:        | 08/03/2010                         |
| Action:      | Monitoring Report - Semi-Annually  |
| Global Id:   | T0603100023                        |
| Action Type: | RESPONSE                           |
| Date:        | 02/03/2011                         |
| Action:      | Monitoring Report - Semi-Annually  |
| Global Id:   | T0603100023                        |
| Action Type: | RESPONSE                           |
| Date:        | 04/26/2010                         |
| Action:      | Correspondence                     |
| Global Id:   | T0603100023                        |
| Action Type: | RESPONSE                           |
| Date:        | 05/01/2014                         |
| Action:      | Monitoring Report - Other          |
| Global Id:   | T0603100023                        |
| Action Type: | RESPONSE                           |



Map ID  
Direction  
Distance  
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number  
EPA ID Number

**HIGHWAY PATROL HEADQUARTE (Continued)**

**S101295374**

|              |                                   |
|--------------|-----------------------------------|
| Date:        | 08/01/2015                        |
| Action:      | Monitoring Report - Semi-Annually |
| Global Id:   | T0603100023                       |
| Action Type: | RESPONSE                          |
| Date:        | 11/01/2014                        |
| Action:      | Monitoring Report - Quarterly     |
| Global Id:   | T0603100023                       |
| Action Type: | RESPONSE                          |
| Date:        | 09/30/2015                        |
| Action:      | Other Report / Document           |
| Global Id:   | T0603100023                       |
| Action Type: | ENFORCEMENT                       |
| Date:        | 08/27/2004                        |
| Action:      | * Verbal Communication            |
| Global Id:   | T0603100023                       |
| Action Type: | ENFORCEMENT                       |
| Date:        | 07/23/2003                        |
| Action:      | Staff Letter                      |
| Global Id:   | T0603100023                       |
| Action Type: | ENFORCEMENT                       |
| Date:        | 01/25/2005                        |
| Action:      | * Verbal Communication            |
| Global Id:   | T0603100023                       |
| Action Type: | ENFORCEMENT                       |
| Date:        | 09/15/2005                        |
| Action:      | Staff Letter                      |
| Global Id:   | T0603100023                       |
| Action Type: | ENFORCEMENT                       |
| Date:        | 05/27/2005                        |
| Action:      | Staff Letter                      |
| Global Id:   | T0603100023                       |
| Action Type: | ENFORCEMENT                       |
| Date:        | 12/20/2005                        |
| Action:      | Staff Letter                      |
| Global Id:   | T0603100023                       |
| Action Type: | ENFORCEMENT                       |
| Date:        | 02/18/2015                        |
| Action:      | Staff Letter                      |
| Global Id:   | T0603100023                       |
| Action Type: | ENFORCEMENT                       |
| Date:        | 05/21/2014                        |
| Action:      | Staff Letter                      |
| Global Id:   | T0603100023                       |
| Action Type: | ENFORCEMENT                       |
| Date:        | 09/22/2015                        |
| Action:      | Staff Letter                      |

Map ID  
Direction  
Distance  
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number  
EPA ID Number

**HIGHWAY PATROL HEADQUARTE (Continued)**

**S101295374**

|              |                                           |
|--------------|-------------------------------------------|
| Global Id:   | T0603100023                               |
| Action Type: | ENFORCEMENT                               |
| Date:        | 09/22/2015                                |
| Action:      | Notification - Preclosure                 |
| Global Id:   | T0603100023                               |
| Action Type: | RESPONSE                                  |
| Date:        | 10/05/2004                                |
| Action:      | Monitoring Report - Quarterly             |
| Global Id:   | T0603100023                               |
| Action Type: | RESPONSE                                  |
| Date:        | 08/04/2003                                |
| Action:      | Monitoring Report - Quarterly             |
| Global Id:   | T0603100023                               |
| Action Type: | RESPONSE                                  |
| Date:        | 12/13/2005                                |
| Action:      | CAP/RAP - Final Remediation / Design Plan |
| Global Id:   | T0603100023                               |
| Action Type: | RESPONSE                                  |
| Date:        | 11/02/2005                                |
| Action:      | Monitoring Report - Quarterly             |
| Global Id:   | T0603100023                               |
| Action Type: | RESPONSE                                  |
| Date:        | 08/01/2011                                |
| Action:      | Monitoring Report - Semi-Annually         |
| Global Id:   | T0603100023                               |
| Action Type: | ENFORCEMENT                               |
| Date:        | 05/06/2002                                |
| Action:      | Staff Letter                              |
| Global Id:   | T0603100023                               |
| Action Type: | ENFORCEMENT                               |
| Date:        | 11/22/2002                                |
| Action:      | Warning Letter                            |
| Global Id:   | T0603100023                               |
| Action Type: | ENFORCEMENT                               |
| Date:        | 09/10/2002                                |
| Action:      | Staff Letter                              |
| Global Id:   | T0603100023                               |
| Action Type: | ENFORCEMENT                               |
| Date:        | 05/20/2003                                |
| Action:      | Staff Letter                              |
| Global Id:   | T0603100023                               |
| Action Type: | ENFORCEMENT                               |
| Date:        | 11/21/2002                                |
| Action:      | Meeting                                   |
| Global Id:   | T0603100023                               |
| Action Type: | ENFORCEMENT                               |

Map ID  
Direction  
Distance  
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number  
EPA ID Number

**HIGHWAY PATROL HEADQUARTE (Continued)**

**S101295374**

Date: 05/11/2004  
Action: \* Verbal Communication

Global Id: T0603100023  
Action Type: ENFORCEMENT  
Date: 02/25/2010  
Action: Staff Letter

Global Id: T0603100023  
Action Type: ENFORCEMENT  
Date: 07/29/2015  
Action: Staff Letter

Global Id: T0603100023  
Action Type: RESPONSE  
Date: 12/16/2009  
Action: CAP/RAP - Final Remediation / Design Plan

Global Id: T0603100023  
Action Type: RESPONSE  
Date: 08/02/2007  
Action: Monitoring Report - Quarterly

Global Id: T0603100023  
Action Type: RESPONSE  
Date: 11/02/2007  
Action: Monitoring Report - Quarterly

Global Id: T0603100023  
Action Type: RESPONSE  
Date: 03/04/2008  
Action: Well Installation Report

Global Id: T0603100023  
Action Type: RESPONSE  
Date: 04/07/2008  
Action: CAP/RAP - Final Remediation / Design Plan - Regulator Responded

Global Id: T0603100023  
Action Type: RESPONSE  
Date: 01/02/2014  
Action: Other Workplan - Regulator Responded

Global Id: T0603100023  
Action Type: RESPONSE  
Date: 03/31/2014  
Action: Soil and Water Investigation Report - Regulator Responded

Global Id: T0603100023  
Action Type: RESPONSE  
Date: 01/07/2014  
Action: Soil Vapor Intrusion Investigation Workplan - Regulator Responded

Global Id: T0603100023  
Action Type: RESPONSE  
Date: 03/31/2014  
Action: Request for Closure - Regulator Responded

Map ID  
Direction  
Distance  
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number  
EPA ID Number

**HIGHWAY PATROL HEADQUARTE (Continued)**

**S101295374**

Global Id: T0603100023  
Action Type: RESPONSE  
Date: 07/16/2014  
Action: Well Installation Workplan - Regulator Responded

Global Id: T0603100023  
Action Type: RESPONSE  
Date: 07/31/2014  
Action: Other Workplan - Regulator Responded

Global Id: T0603100023  
Action Type: RESPONSE  
Date: 09/01/2015  
Action: Request for Closure - Regulator Responded

Global Id: T0603100023  
Action Type: REMEDIATION  
Date: 01/01/1996  
Action: Soil Vapor Extraction (SVE)

**LUST:**

Global Id: T0603100023  
Status: Open - Case Begin Date  
Status Date: 12/05/1986

Global Id: T0603100023  
Status: Open - Site Assessment  
Status Date: 12/18/1986

Global Id: T0603100023  
Status: Open - Site Assessment  
Status Date: 09/14/1987

Global Id: T0603100023  
Status: Open - Site Assessment  
Status Date: 02/07/1989

Global Id: T0603100023  
Status: Open - Remediation  
Status Date: 07/06/1989

Global Id: T0603100023  
Status: Open - Remediation  
Status Date: 12/21/1989

Global Id: T0603100023  
Status: Open - Verification Monitoring  
Status Date: 02/01/1996

Global Id: T0603100023  
Status: Open - Remediation  
Status Date: 11/18/2005

Global Id: T0603100023  
Status: Open - Remediation  
Status Date: 01/29/2007

Map ID  
Direction  
Distance  
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number  
EPA ID Number

**HIGHWAY PATROL HEADQUARTE (Continued)**

**S101295374**

Global Id: T0603100023  
Status: Open - Remediation  
Status Date: 04/18/2007  
  
Global Id: T0603100023  
Status: Open - Remediation  
Status Date: 02/24/2009  
  
Global Id: T0603100023  
Status: Completed - Case Closed  
Status Date: 05/19/2016

**LUST REG 5:**

Name: HIGHWAY PATROL HEADQUARTERS  
Address: 11050 13TH AVE  
City: HANFORD  
Region: 5  
Status: Remediation Plan  
Case Number: 5T16000022  
Case Type: Drinking Water Aquifer affected  
Substance: GASOLINE  
Staff Initials: JDW  
Lead Agency: Regional  
Program: LUST  
MTBE Code: 2

**CORTESE:**

Name: HIGHWAY PATROL HEADQUARTERS  
Address: 11050 13TH AVE  
City,State,Zip: HANFORD, CA 93230  
Region: CORTESE  
Envirostor Id: Not reported  
Global ID: T0603100023  
Site/Facility Type: LUST CLEANUP SITE  
Cleanup Status: COMPLETED - CASE CLOSED  
Status Date: Not reported  
Site Code: Not reported  
Latitude: Not reported  
Longitude: Not reported  
Owner: Not reported  
Enf Type: Not reported  
Swat R: Not reported  
Flag: active  
Order No: Not reported  
Waste Discharge System No: Not reported  
Effective Date: Not reported  
Region 2: Not reported  
WID Id: Not reported  
Solid Waste Id No: Not reported  
Waste Management Uit Name: Not reported  
File Name: Active Open

**HIST CORTESE:**

edr\_fname: HIGHWAY PATROL HEADQUARTE  
edr\_fadd1: 11050 13TH

Map ID  
Direction  
Distance  
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number  
EPA ID Number

**HIGHWAY PATROL HEADQUARTE (Continued)**

**S101295374**

City,State,Zip: HANFORD, CA 93230  
Region: CORTESE  
Facility County Code: 16  
Reg By: LTNKA  
Reg Id: 5T16000022

**CERS:**

Name: HIGHWAY PATROL HEADQUARTERS  
Address: 11050 13TH AVE  
City,State,Zip: HANFORD, CA 93230  
Site ID: 736261  
CERS ID: T0603100023  
CERS Description: Leaking Underground Storage Tank Cleanup Site

**Affiliation:**

Affiliation Type Desc: Local Agency Caseworker  
Entity Name: PATZER, SUSAN E. - KINGS COUNTY  
Entity Title: Not reported  
Affiliation Address: Not reported  
Affiliation City: r5 UNKNOWN  
Affiliation State: CA  
Affiliation Country: Not reported  
Affiliation Zip: Not reported  
Affiliation Phone: ,

Affiliation Type Desc: Regional Board Caseworker  
Entity Name: MICHEALE EASLEY - CENTRAL VALLEY RWQCB (REGION 5F)  
Entity Title: Not reported  
Affiliation Address: 1685 E Street  
Affiliation City: FRESNO  
Affiliation State: CA  
Affiliation Country: Not reported  
Affiliation Zip: Not reported  
Affiliation Phone: 5594884391,

**A7**  
**WNW**  
**1/4-1/2**  
**0.466 mi.**  
**2462 ft.**

**HIGHWAY PATROL HEADQUARTERS**  
**11050 13TH AVE**  
**HANFORD, CA 93230**

**UST FINDER RELEASE 1028975963**  
**N/A**

**Site 2 of 2 in cluster A**

**Relative:**  
**Lower**

**UST FINDER RELEASE:**

**Actual:**  
**240 ft.**

Object ID: 55493  
Facility ID: Not reported  
Lust ID: CAT0603100023  
Name: HIGHWAY PATROL HEADQUARTERS  
Address: 11050 13TH AVE  
City,State,Zip: HANFORD, CA 93230  
Address Match Type: PointAddress  
Reported Date: Not reported  
Status: No Further Action  
Substance: Not reported  
Population within 1500ft: 37  
Domestic Wells within 1500ft: 2  
Land Use: Non-Developed  
Within SPA: No  
SPA PWS Facility ID: Not reported

Map ID  
Direction  
Distance  
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number  
EPA ID Number

**HIGHWAY PATROL HEADQUARTERS (Continued)**

**1028975963**

|                                   |                   |
|-----------------------------------|-------------------|
| SPA Water Type:                   | Not reported      |
| SPA Facility Type:                | Not reported      |
| SPA HUC12:                        | Not reported      |
| Within WHPA:                      | Yes               |
| WHPA PWS Facility ID:             | CA1600607_34454   |
| WHPA Water Type:                  | GW - Ground water |
| WHPA Facility Type:               | WL - Well         |
| WHPA HUC12:                       | 180300122004      |
| Within 100yr Floodplain:          | No                |
| Tribe:                            | Not reported      |
| EPA Region:                       | 9                 |
| NFA Letter 1:                     | Not reported      |
| NFA Letter 2:                     | Not reported      |
| NFA Letter 3:                     | Not reported      |
| NFA Letter 4:                     | Not reported      |
| Closed With Residual Contaminate: | Not reported      |
| Coordinate Source:                | Geocode           |
| X Coord:                          | -119.69108        |
| Y Coord:                          | 36.3128100000001  |
| Latitude:                         | 36.3128099999999  |
| Longitude:                        | -119.691079999999 |

Count: 1 records.

ORPHAN SUMMARY

| City    | EDR ID     | Site Name | Site Address             | Zip   | Database(s) |
|---------|------------|-----------|--------------------------|-------|-------------|
| HANFORD | S122412428 |           | 7184 HANFORD - ARMONA RD | 93230 | CDL         |



## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

**Number of Days to Update:** Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

### STANDARD ENVIRONMENTAL RECORDS

#### ***Lists of Federal NPL (Superfund) sites***

##### **NPL: National Priority List**

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

|                                         |                                        |
|-----------------------------------------|----------------------------------------|
| Date of Government Version: 02/29/2024  | Source: EPA                            |
| Date Data Arrived at EDR: 03/01/2024    | Telephone: N/A                         |
| Date Made Active in Reports: 03/27/2024 | Last EDR Contact: 06/03/2024           |
| Number of Days to Update: 26            | Next Scheduled EDR Contact: 07/08/2024 |
|                                         | Data Release Frequency: Quarterly      |

##### **NPL Site Boundaries**

###### **Sources:**

EPA's Environmental Photographic Interpretation Center (EPIC)  
Telephone: 202-564-7333

EPA Region 1  
Telephone 617-918-1143

EPA Region 6  
Telephone: 214-655-6659

EPA Region 3  
Telephone 215-814-5418

EPA Region 7  
Telephone: 913-551-7247

EPA Region 4  
Telephone 404-562-8033

EPA Region 8  
Telephone: 303-312-6774

EPA Region 5  
Telephone 312-886-6686

EPA Region 9  
Telephone: 415-947-4246

EPA Region 10  
Telephone 206-553-8665

##### **Proposed NPL: Proposed National Priority List Sites**

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

|                                         |                                        |
|-----------------------------------------|----------------------------------------|
| Date of Government Version: 02/29/2024  | Source: EPA                            |
| Date Data Arrived at EDR: 03/01/2024    | Telephone: N/A                         |
| Date Made Active in Reports: 03/27/2024 | Last EDR Contact: 06/03/2024           |
| Number of Days to Update: 26            | Next Scheduled EDR Contact: 07/08/2024 |
|                                         | Data Release Frequency: Quarterly      |

##### **NPL LIENS: Federal Superfund Liens**

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 10/15/1991  
Date Data Arrived at EDR: 02/02/1994  
Date Made Active in Reports: 03/30/1994  
Number of Days to Update: 56

Source: EPA  
Telephone: 202-564-4267  
Last EDR Contact: 08/15/2011  
Next Scheduled EDR Contact: 11/28/2011  
Data Release Frequency: No Update Planned

### ***Lists of Federal Delisted NPL sites***

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 02/29/2024  
Date Data Arrived at EDR: 03/01/2024  
Date Made Active in Reports: 03/27/2024  
Number of Days to Update: 26

Source: EPA  
Telephone: N/A  
Last EDR Contact: 06/03/2024  
Next Scheduled EDR Contact: 07/08/2024  
Data Release Frequency: Quarterly

### ***Lists of Federal sites subject to CERCLA removals and CERCLA orders***

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 12/20/2023  
Date Data Arrived at EDR: 12/20/2023  
Date Made Active in Reports: 01/24/2024  
Number of Days to Update: 35

Source: Environmental Protection Agency  
Telephone: 703-603-8704  
Last EDR Contact: 03/26/2024  
Next Scheduled EDR Contact: 07/08/2024  
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly known as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 04/22/2024  
Date Data Arrived at EDR: 05/01/2024  
Date Made Active in Reports: 05/24/2024  
Number of Days to Update: 23

Source: EPA  
Telephone: 800-424-9346  
Last EDR Contact: 06/03/2024  
Next Scheduled EDR Contact: 07/22/2024  
Data Release Frequency: Quarterly

### ***Lists of Federal CERCLA sites with NFRAP***

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be potential NPL site.

|                                         |                                        |
|-----------------------------------------|----------------------------------------|
| Date of Government Version: 04/22/2024  | Source: EPA                            |
| Date Data Arrived at EDR: 05/01/2024    | Telephone: 800-424-9346                |
| Date Made Active in Reports: 05/24/2024 | Last EDR Contact: 06/03/2024           |
| Number of Days to Update: 23            | Next Scheduled EDR Contact: 07/22/2024 |
|                                         | Data Release Frequency: Quarterly      |

### ***Lists of Federal RCRA facilities undergoing Corrective Action***

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

|                                         |                                        |
|-----------------------------------------|----------------------------------------|
| Date of Government Version: 12/04/2023  | Source: EPA                            |
| Date Data Arrived at EDR: 12/06/2023    | Telephone: 800-424-9346                |
| Date Made Active in Reports: 12/12/2023 | Last EDR Contact: 03/19/2024           |
| Number of Days to Update: 6             | Next Scheduled EDR Contact: 07/01/2024 |
|                                         | Data Release Frequency: Quarterly      |

### ***Lists of Federal RCRA TSD facilities***

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

|                                         |                                         |
|-----------------------------------------|-----------------------------------------|
| Date of Government Version: 12/04/2023  | Source: Environmental Protection Agency |
| Date Data Arrived at EDR: 12/06/2023    | Telephone: (415) 495-8895               |
| Date Made Active in Reports: 12/12/2023 | Last EDR Contact: 03/19/2024            |
| Number of Days to Update: 6             | Next Scheduled EDR Contact: 07/01/2024  |
|                                         | Data Release Frequency: Quarterly       |

### ***Lists of Federal RCRA generators***

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

|                                         |                                         |
|-----------------------------------------|-----------------------------------------|
| Date of Government Version: 12/04/2023  | Source: Environmental Protection Agency |
| Date Data Arrived at EDR: 12/06/2023    | Telephone: (415) 495-8895               |
| Date Made Active in Reports: 12/12/2023 | Last EDR Contact: 03/19/2024            |
| Number of Days to Update: 6             | Next Scheduled EDR Contact: 07/01/2024  |
|                                         | Data Release Frequency: Quarterly       |

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

|                                         |                                         |
|-----------------------------------------|-----------------------------------------|
| Date of Government Version: 12/04/2023  | Source: Environmental Protection Agency |
| Date Data Arrived at EDR: 12/06/2023    | Telephone: (415) 495-8895               |
| Date Made Active in Reports: 12/12/2023 | Last EDR Contact: 03/19/2024            |
| Number of Days to Update: 6             | Next Scheduled EDR Contact: 07/01/2024  |
|                                         | Data Release Frequency: Quarterly       |

### RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

|                                         |                                         |
|-----------------------------------------|-----------------------------------------|
| Date of Government Version: 12/04/2023  | Source: Environmental Protection Agency |
| Date Data Arrived at EDR: 12/06/2023    | Telephone: (415) 495-8895               |
| Date Made Active in Reports: 12/12/2023 | Last EDR Contact: 03/19/2024            |
| Number of Days to Update: 6             | Next Scheduled EDR Contact: 07/01/2024  |
|                                         | Data Release Frequency: Quarterly       |

### ***Federal institutional controls / engineering controls registries***

#### LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

|                                         |                                        |
|-----------------------------------------|----------------------------------------|
| Date of Government Version: 02/14/2024  | Source: Department of the Navy         |
| Date Data Arrived at EDR: 02/16/2024    | Telephone: 843-820-7326                |
| Date Made Active in Reports: 04/04/2024 | Last EDR Contact: 05/17/2024           |
| Number of Days to Update: 48            | Next Scheduled EDR Contact: 08/19/2024 |
|                                         | Data Release Frequency: Varies         |

#### US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

|                                         |                                         |
|-----------------------------------------|-----------------------------------------|
| Date of Government Version: 02/13/2024  | Source: Environmental Protection Agency |
| Date Data Arrived at EDR: 02/21/2024    | Telephone: 703-603-0695                 |
| Date Made Active in Reports: 04/04/2024 | Last EDR Contact: 05/21/2024            |
| Number of Days to Update: 43            | Next Scheduled EDR Contact: 09/02/2024  |
|                                         | Data Release Frequency: Varies          |

#### US INST CONTROLS: Institutional Controls Sites List

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

|                                         |                                         |
|-----------------------------------------|-----------------------------------------|
| Date of Government Version: 02/13/2024  | Source: Environmental Protection Agency |
| Date Data Arrived at EDR: 02/21/2024    | Telephone: 703-603-0695                 |
| Date Made Active in Reports: 04/04/2024 | Last EDR Contact: 05/21/2024            |
| Number of Days to Update: 43            | Next Scheduled EDR Contact: 09/02/2024  |
|                                         | Data Release Frequency: Varies          |

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### ***Federal ERNS list***

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/12/2023

Date Data Arrived at EDR: 12/13/2023

Date Made Active in Reports: 02/28/2024

Number of Days to Update: 77

Source: National Response Center, United States Coast Guard

Telephone: 202-267-2180

Last EDR Contact: 03/19/2024

Next Scheduled EDR Contact: 07/01/2024

Data Release Frequency: Quarterly

### ***Lists of state- and tribal (Superfund) equivalent sites***

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity.

These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 01/22/2024

Date Data Arrived at EDR: 01/23/2024

Date Made Active in Reports: 04/08/2024

Number of Days to Update: 76

Source: Department of Toxic Substances Control

Telephone: 916-323-3400

Last EDR Contact: 04/23/2024

Next Scheduled EDR Contact: 08/05/2024

Data Release Frequency: Quarterly

### ***Lists of state- and tribal hazardous waste facilities***

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifies sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 01/22/2024

Date Data Arrived at EDR: 01/23/2024

Date Made Active in Reports: 04/08/2024

Number of Days to Update: 76

Source: Department of Toxic Substances Control

Telephone: 916-323-3400

Last EDR Contact: 04/23/2024

Next Scheduled EDR Contact: 08/05/2024

Data Release Frequency: Quarterly

### ***Lists of state and tribal landfills and solid waste disposal facilities***

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inventory of solid waste disposal facilities or landfills. These may be active or inactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/05/2024

Date Data Arrived at EDR: 02/06/2024

Date Made Active in Reports: 04/26/2024

Number of Days to Update: 80

Source: Department of Resources Recycling and Recovery

Telephone: 916-341-6320

Last EDR Contact: 05/07/2024

Next Scheduled EDR Contact: 08/19/2024

Data Release Frequency: Quarterly

### ***Lists of state and tribal leaking storage tanks***

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005

Date Data Arrived at EDR: 06/07/2005

Date Made Active in Reports: 06/29/2005

Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)

Telephone: 760-241-7365

Last EDR Contact: 09/12/2011

Next Scheduled EDR Contact: 12/26/2011

Data Release Frequency: No Update Planned

### LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001

Date Data Arrived at EDR: 04/23/2001

Date Made Active in Reports: 05/21/2001

Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)

Telephone: 858-637-5595

Last EDR Contact: 09/26/2011

Next Scheduled EDR Contact: 01/09/2012

Data Release Frequency: No Update Planned

### LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005

Date Data Arrived at EDR: 02/15/2005

Date Made Active in Reports: 03/28/2005

Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)

Telephone: 909-782-4496

Last EDR Contact: 08/15/2011

Next Scheduled EDR Contact: 11/28/2011

Data Release Frequency: No Update Planned

### LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004

Date Data Arrived at EDR: 02/26/2004

Date Made Active in Reports: 03/24/2004

Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)

Telephone: 760-776-8943

Last EDR Contact: 08/01/2011

Next Scheduled EDR Contact: 11/14/2011

Data Release Frequency: No Update Planned

### LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008

Date Data Arrived at EDR: 07/22/2008

Date Made Active in Reports: 07/31/2008

Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)

Telephone: 916-464-4834

Last EDR Contact: 07/01/2011

Next Scheduled EDR Contact: 10/17/2011

Data Release Frequency: No Update Planned

### LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004

Date Data Arrived at EDR: 09/07/2004

Date Made Active in Reports: 10/12/2004

Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)

Telephone: 213-576-6710

Last EDR Contact: 09/06/2011

Next Scheduled EDR Contact: 12/19/2011

Data Release Frequency: No Update Planned

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003

Date Data Arrived at EDR: 05/19/2003

Date Made Active in Reports: 06/02/2003

Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)

Telephone: 805-542-4786

Last EDR Contact: 07/18/2011

Next Scheduled EDR Contact: 10/31/2011

Data Release Frequency: No Update Planned

### LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004

Date Data Arrived at EDR: 10/20/2004

Date Made Active in Reports: 11/19/2004

Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)

Telephone: 510-622-2433

Last EDR Contact: 09/19/2011

Next Scheduled EDR Contact: 01/02/2012

Data Release Frequency: No Update Planned

### LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)

Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/04/2024

Date Data Arrived at EDR: 03/05/2024

Date Made Active in Reports: 05/24/2024

Number of Days to Update: 80

Source: State Water Resources Control Board

Telephone: see region list

Last EDR Contact: 06/04/2024

Next Scheduled EDR Contact: 09/16/2024

Data Release Frequency: Quarterly

### LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003

Date Data Arrived at EDR: 09/10/2003

Date Made Active in Reports: 10/07/2003

Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)

Telephone: 530-542-5572

Last EDR Contact: 09/12/2011

Next Scheduled EDR Contact: 12/26/2011

Data Release Frequency: No Update Planned

### LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001

Date Data Arrived at EDR: 02/28/2001

Date Made Active in Reports: 03/29/2001

Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)

Telephone: 707-570-3769

Last EDR Contact: 08/01/2011

Next Scheduled EDR Contact: 11/14/2011

Data Release Frequency: No Update Planned

### INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 10/25/2023

Date Data Arrived at EDR: 01/17/2024

Date Made Active in Reports: 03/13/2024

Number of Days to Update: 56

Source: EPA Region 8

Telephone: 303-312-6271

Last EDR Contact: 05/30/2024

Next Scheduled EDR Contact: 07/29/2024

Data Release Frequency: Varies

### INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 10/25/2023  
Date Data Arrived at EDR: 01/17/2024  
Date Made Active in Reports: 03/13/2024  
Number of Days to Update: 56

Source: EPA Region 10  
Telephone: 206-553-2857  
Last EDR Contact: 05/30/2024  
Next Scheduled EDR Contact: 07/29/2024  
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land  
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 10/25/2023  
Date Data Arrived at EDR: 01/17/2024  
Date Made Active in Reports: 03/13/2024  
Number of Days to Update: 56

Source: EPA Region 7  
Telephone: 913-551-7003  
Last EDR Contact: 05/30/2024  
Next Scheduled EDR Contact: 07/29/2024  
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land  
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 10/25/2023  
Date Data Arrived at EDR: 01/17/2024  
Date Made Active in Reports: 03/13/2024  
Number of Days to Update: 56

Source: Environmental Protection Agency  
Telephone: 415-972-3372  
Last EDR Contact: 05/30/2024  
Next Scheduled EDR Contact: 07/29/2024  
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land  
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 10/04/2023  
Date Data Arrived at EDR: 01/17/2024  
Date Made Active in Reports: 03/13/2024  
Number of Days to Update: 56

Source: EPA, Region 5  
Telephone: 312-886-7439  
Last EDR Contact: 05/30/2024  
Next Scheduled EDR Contact: 07/29/2024  
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land  
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 10/25/2023  
Date Data Arrived at EDR: 01/17/2024  
Date Made Active in Reports: 03/13/2024  
Number of Days to Update: 56

Source: EPA Region 4  
Telephone: 404-562-8677  
Last EDR Contact: 05/30/2024  
Next Scheduled EDR Contact: 07/29/2024  
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land  
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 10/25/2023  
Date Data Arrived at EDR: 01/17/2024  
Date Made Active in Reports: 03/13/2024  
Number of Days to Update: 56

Source: EPA Region 1  
Telephone: 617-918-1313  
Last EDR Contact: 05/30/2024  
Next Scheduled EDR Contact: 07/29/2024  
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land  
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 10/25/2023  
Date Data Arrived at EDR: 01/17/2024  
Date Made Active in Reports: 03/13/2024  
Number of Days to Update: 56

Source: EPA Region 6  
Telephone: 214-665-6597  
Last EDR Contact: 05/30/2024  
Next Scheduled EDR Contact: 07/29/2024  
Data Release Frequency: Varies



## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### CPS-SLIC: Statewide SLIC Cases (GEOTRACKER)

Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/04/2024

Date Data Arrived at EDR: 03/05/2024

Date Made Active in Reports: 05/24/2024

Number of Days to Update: 80

Source: State Water Resources Control Board

Telephone: 866-480-1028

Last EDR Contact: 06/04/2024

Next Scheduled EDR Contact: 09/16/2024

Data Release Frequency: Varies

### SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003

Date Data Arrived at EDR: 04/07/2003

Date Made Active in Reports: 04/25/2003

Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)

Telephone: 707-576-2220

Last EDR Contact: 08/01/2011

Next Scheduled EDR Contact: 11/14/2011

Data Release Frequency: No Update Planned

### SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004

Date Data Arrived at EDR: 10/20/2004

Date Made Active in Reports: 11/19/2004

Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)

Telephone: 510-286-0457

Last EDR Contact: 09/19/2011

Next Scheduled EDR Contact: 01/02/2012

Data Release Frequency: No Update Planned

### SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006

Date Data Arrived at EDR: 05/18/2006

Date Made Active in Reports: 06/15/2006

Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)

Telephone: 805-549-3147

Last EDR Contact: 07/18/2011

Next Scheduled EDR Contact: 10/31/2011

Data Release Frequency: No Update Planned

### SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004

Date Data Arrived at EDR: 11/18/2004

Date Made Active in Reports: 01/04/2005

Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)

Telephone: 213-576-6600

Last EDR Contact: 07/01/2011

Next Scheduled EDR Contact: 10/17/2011

Data Release Frequency: No Update Planned

### SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005

Date Data Arrived at EDR: 04/05/2005

Date Made Active in Reports: 04/21/2005

Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)

Telephone: 916-464-3291

Last EDR Contact: 09/12/2011

Next Scheduled EDR Contact: 12/26/2011

Data Release Frequency: No Update Planned

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005  
Date Data Arrived at EDR: 05/25/2005  
Date Made Active in Reports: 06/16/2005  
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch  
Telephone: 619-241-6583  
Last EDR Contact: 08/15/2011  
Next Scheduled EDR Contact: 11/28/2011  
Data Release Frequency: No Update Planned

### SLIC REG 6L: SLIC Sites

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004  
Date Data Arrived at EDR: 09/07/2004  
Date Made Active in Reports: 10/12/2004  
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region  
Telephone: 530-542-5574  
Last EDR Contact: 08/15/2011  
Next Scheduled EDR Contact: 11/28/2011  
Data Release Frequency: No Update Planned

### SLIC REG 7: SLIC List

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004  
Date Data Arrived at EDR: 11/29/2004  
Date Made Active in Reports: 01/04/2005  
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region  
Telephone: 760-346-7491  
Last EDR Contact: 08/01/2011  
Next Scheduled EDR Contact: 11/14/2011  
Data Release Frequency: No Update Planned

### SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008  
Date Data Arrived at EDR: 04/03/2008  
Date Made Active in Reports: 04/14/2008  
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)  
Telephone: 951-782-3298  
Last EDR Contact: 09/12/2011  
Next Scheduled EDR Contact: 12/26/2011  
Data Release Frequency: No Update Planned

### SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007  
Date Data Arrived at EDR: 09/11/2007  
Date Made Active in Reports: 09/28/2007  
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)  
Telephone: 858-467-2980  
Last EDR Contact: 08/08/2011  
Next Scheduled EDR Contact: 11/21/2011  
Data Release Frequency: No Update Planned

### ***Lists of state and tribal registered storage tanks***

#### FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 11/16/2023  
Date Data Arrived at EDR: 11/16/2023  
Date Made Active in Reports: 02/13/2024  
Number of Days to Update: 89

Source: FEMA  
Telephone: 202-646-5797  
Last EDR Contact: 03/19/2024  
Next Scheduled EDR Contact: 07/15/2024  
Data Release Frequency: Varies

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### UST: Active UST Facilities

Active UST facilities gathered from the local regulatory agencies

|                                         |                                        |
|-----------------------------------------|----------------------------------------|
| Date of Government Version: 03/04/2024  | Source: SWRCB                          |
| Date Data Arrived at EDR: 03/05/2024    | Telephone: 916-341-5851                |
| Date Made Active in Reports: 05/29/2024 | Last EDR Contact: 06/04/2024           |
| Number of Days to Update: 85            | Next Scheduled EDR Contact: 09/16/2024 |
|                                         | Data Release Frequency: Semi-Annually  |

### UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases

UST cases that are being considered for closure by either the State Water Resources Control Board or the Executive Director have been posted for a 60-day public comment period. UST Case Closures being proposed for consideration by the State Water Resources Control Board. These are primarily UST cases that meet closure criteria under the decisional framework in State Water Board Resolution No. 92-49 and other Board orders. UST Case Closures proposed for consideration by the Executive Director pursuant to State Water Board Resolution No. 2012-0061. These are cases that meet the criteria of the Low-Threat UST Case Closure Policy. UST Case Closure Review Denials and Approved Orders.

|                                         |                                             |
|-----------------------------------------|---------------------------------------------|
| Date of Government Version: 02/13/2024  | Source: State Water Resources Control Board |
| Date Data Arrived at EDR: 03/05/2024    | Telephone: 916-327-7844                     |
| Date Made Active in Reports: 06/03/2024 | Last EDR Contact: 06/04/2024                |
| Number of Days to Update: 90            | Next Scheduled EDR Contact: 09/16/2024      |
|                                         | Data Release Frequency: Varies              |

### MILITARY UST SITES: Military UST Sites (GEOTRACKER)

Military ust sites

|                                         |                                             |
|-----------------------------------------|---------------------------------------------|
| Date of Government Version: 03/04/2024  | Source: State Water Resources Control Board |
| Date Data Arrived at EDR: 03/05/2024    | Telephone: 866-480-1028                     |
| Date Made Active in Reports: 05/24/2024 | Last EDR Contact: 06/04/2024                |
| Number of Days to Update: 80            | Next Scheduled EDR Contact: 09/16/2024      |
|                                         | Data Release Frequency: Varies              |

### AST: Aboveground Petroleum Storage Tank Facilities

A listing of aboveground storage tank petroleum storage tank locations.

|                                         |                                                    |
|-----------------------------------------|----------------------------------------------------|
| Date of Government Version: 07/06/2016  | Source: California Environmental Protection Agency |
| Date Data Arrived at EDR: 07/12/2016    | Telephone: 916-327-5092                            |
| Date Made Active in Reports: 09/19/2016 | Last EDR Contact: 03/08/2024                       |
| Number of Days to Update: 69            | Next Scheduled EDR Contact: 06/24/2024             |
|                                         | Data Release Frequency: Varies                     |

### INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

|                                         |                                        |
|-----------------------------------------|----------------------------------------|
| Date of Government Version: 10/24/2023  | Source: EPA Region 7                   |
| Date Data Arrived at EDR: 01/17/2024    | Telephone: 913-551-7003                |
| Date Made Active in Reports: 03/13/2024 | Last EDR Contact: 05/30/2024           |
| Number of Days to Update: 56            | Next Scheduled EDR Contact: 07/29/2024 |
|                                         | Data Release Frequency: Varies         |

### INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

|                                         |                                        |
|-----------------------------------------|----------------------------------------|
| Date of Government Version: 10/24/2023  | Source: EPA Region 8                   |
| Date Data Arrived at EDR: 01/17/2024    | Telephone: 303-312-6137                |
| Date Made Active in Reports: 03/13/2024 | Last EDR Contact: 05/30/2024           |
| Number of Days to Update: 56            | Next Scheduled EDR Contact: 07/29/2024 |
|                                         | Data Release Frequency: Varies         |

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

|                                         |                                        |
|-----------------------------------------|----------------------------------------|
| Date of Government Version: 10/24/2023  | Source: EPA Region 9                   |
| Date Data Arrived at EDR: 01/17/2024    | Telephone: 415-972-3368                |
| Date Made Active in Reports: 03/13/2024 | Last EDR Contact: 05/30/2024           |
| Number of Days to Update: 56            | Next Scheduled EDR Contact: 07/29/2024 |
|                                         | Data Release Frequency: Varies         |

### INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

|                                         |                                        |
|-----------------------------------------|----------------------------------------|
| Date of Government Version: 10/24/2023  | Source: EPA Region 4                   |
| Date Data Arrived at EDR: 01/17/2024    | Telephone: 404-562-9424                |
| Date Made Active in Reports: 03/13/2024 | Last EDR Contact: 04/17/2024           |
| Number of Days to Update: 56            | Next Scheduled EDR Contact: 07/29/2024 |
|                                         | Data Release Frequency: Varies         |

### INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

|                                         |                                        |
|-----------------------------------------|----------------------------------------|
| Date of Government Version: 10/24/2023  | Source: EPA, Region 1                  |
| Date Data Arrived at EDR: 01/17/2024    | Telephone: 617-918-1313                |
| Date Made Active in Reports: 03/13/2024 | Last EDR Contact: 05/30/2024           |
| Number of Days to Update: 56            | Next Scheduled EDR Contact: 07/29/2024 |
|                                         | Data Release Frequency: Varies         |

### INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

|                                         |                                        |
|-----------------------------------------|----------------------------------------|
| Date of Government Version: 10/17/2023  | Source: EPA Region 5                   |
| Date Data Arrived at EDR: 01/17/2024    | Telephone: 312-886-6136                |
| Date Made Active in Reports: 03/13/2024 | Last EDR Contact: 04/17/2024           |
| Number of Days to Update: 56            | Next Scheduled EDR Contact: 07/29/2024 |
|                                         | Data Release Frequency: Varies         |

### INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

|                                         |                                        |
|-----------------------------------------|----------------------------------------|
| Date of Government Version: 10/24/2023  | Source: EPA Region 10                  |
| Date Data Arrived at EDR: 01/17/2024    | Telephone: 206-553-2857                |
| Date Made Active in Reports: 03/13/2024 | Last EDR Contact: 05/30/2024           |
| Number of Days to Update: 56            | Next Scheduled EDR Contact: 07/29/2024 |
|                                         | Data Release Frequency: Varies         |

### INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

|                                         |                                        |
|-----------------------------------------|----------------------------------------|
| Date of Government Version: 10/24/2023  | Source: EPA Region 6                   |
| Date Data Arrived at EDR: 01/17/2024    | Telephone: 214-665-7591                |
| Date Made Active in Reports: 03/13/2024 | Last EDR Contact: 05/30/2024           |
| Number of Days to Update: 56            | Next Scheduled EDR Contact: 07/29/2024 |
|                                         | Data Release Frequency: Varies         |

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

## ***Lists of state and tribal voluntary cleanup sites***

### **INDIAN VCP R7: Voluntary Cleanup Priority Listing**

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

|                                         |                                        |
|-----------------------------------------|----------------------------------------|
| Date of Government Version: 03/20/2008  | Source: EPA, Region 7                  |
| Date Data Arrived at EDR: 04/22/2008    | Telephone: 913-551-7365                |
| Date Made Active in Reports: 05/19/2008 | Last EDR Contact: 07/08/2021           |
| Number of Days to Update: 27            | Next Scheduled EDR Contact: 07/20/2009 |
|                                         | Data Release Frequency: Varies         |

### **VCP: Voluntary Cleanup Program Properties**

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

|                                         |                                                |
|-----------------------------------------|------------------------------------------------|
| Date of Government Version: 01/22/2024  | Source: Department of Toxic Substances Control |
| Date Data Arrived at EDR: 01/23/2024    | Telephone: 916-323-3400                        |
| Date Made Active in Reports: 04/08/2024 | Last EDR Contact: 04/23/2024                   |
| Number of Days to Update: 76            | Next Scheduled EDR Contact: 08/05/2024         |
|                                         | Data Release Frequency: Quarterly              |

### **INDIAN VCP R1: Voluntary Cleanup Priority Listing**

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

|                                         |                                        |
|-----------------------------------------|----------------------------------------|
| Date of Government Version: 07/27/2015  | Source: EPA, Region 1                  |
| Date Data Arrived at EDR: 09/29/2015    | Telephone: 617-918-1102                |
| Date Made Active in Reports: 02/18/2016 | Last EDR Contact: 03/18/2024           |
| Number of Days to Update: 142           | Next Scheduled EDR Contact: 07/01/2024 |
|                                         | Data Release Frequency: Varies         |

## ***Lists of state and tribal brownfield sites***

### **BROWNFIELDS: Considered Brownfields Sites Listing**

A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

|                                         |                                             |
|-----------------------------------------|---------------------------------------------|
| Date of Government Version: 12/13/2023  | Source: State Water Resources Control Board |
| Date Data Arrived at EDR: 12/13/2023    | Telephone: 916-323-7905                     |
| Date Made Active in Reports: 03/07/2024 | Last EDR Contact: 03/19/2024                |
| Number of Days to Update: 85            | Next Scheduled EDR Contact: 07/01/2024      |
|                                         | Data Release Frequency: Quarterly           |

## **ADDITIONAL ENVIRONMENTAL RECORDS**

### ***Local Brownfield lists***

### **US BROWNFIELDS: A Listing of Brownfields Sites**

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

|                                         |                                         |
|-----------------------------------------|-----------------------------------------|
| Date of Government Version: 03/11/2024  | Source: Environmental Protection Agency |
| Date Data Arrived at EDR: 03/12/2024    | Telephone: 202-566-2777                 |
| Date Made Active in Reports: 05/10/2024 | Last EDR Contact: 03/12/2024            |
| Number of Days to Update: 59            | Next Scheduled EDR Contact: 06/24/2024  |
|                                         | Data Release Frequency: Semi-Annually   |

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

## ***Local Lists of Landfill / Solid Waste Disposal Sites***

### **WMUDS/SWAT: Waste Management Unit Database**

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000  
Date Data Arrived at EDR: 04/10/2000  
Date Made Active in Reports: 05/10/2000  
Number of Days to Update: 30

Source: State Water Resources Control Board  
Telephone: 916-227-4448  
Last EDR Contact: 04/19/2024  
Next Scheduled EDR Contact: 08/05/2024  
Data Release Frequency: No Update Planned

### **SWRCY: Recycler Database**

A listing of recycling facilities in California.

Date of Government Version: 03/04/2024  
Date Data Arrived at EDR: 03/05/2024  
Date Made Active in Reports: 05/28/2024  
Number of Days to Update: 84

Source: Department of Conservation  
Telephone: 916-323-3836  
Last EDR Contact: 06/04/2024  
Next Scheduled EDR Contact: 09/16/2024  
Data Release Frequency: Quarterly

### **HAULERS: Registered Waste Tire Haulers Listing**

A listing of registered waste tire haulers.

Date of Government Version: 04/04/2024  
Date Data Arrived at EDR: 04/05/2024  
Date Made Active in Reports: 04/15/2024  
Number of Days to Update: 10

Source: Integrated Waste Management Board  
Telephone: 916-341-6422  
Last EDR Contact: 04/05/2024  
Next Scheduled EDR Contact: 08/19/2024  
Data Release Frequency: Varies

### **INDIAN ODI: Report on the Status of Open Dumps on Indian Lands**

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998  
Date Data Arrived at EDR: 12/03/2007  
Date Made Active in Reports: 01/24/2008  
Number of Days to Update: 52

Source: Environmental Protection Agency  
Telephone: 703-308-8245  
Last EDR Contact: 04/22/2024  
Next Scheduled EDR Contact: 08/05/2024  
Data Release Frequency: Varies

### **DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations**

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009  
Date Data Arrived at EDR: 05/07/2009  
Date Made Active in Reports: 09/21/2009  
Number of Days to Update: 137

Source: EPA, Region 9  
Telephone: 415-947-4219  
Last EDR Contact: 04/15/2024  
Next Scheduled EDR Contact: 07/29/2024  
Data Release Frequency: No Update Planned

### **ODI: Open Dump Inventory**

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985  
Date Data Arrived at EDR: 08/09/2004  
Date Made Active in Reports: 09/17/2004  
Number of Days to Update: 39

Source: Environmental Protection Agency  
Telephone: 800-424-9346  
Last EDR Contact: 06/09/2004  
Next Scheduled EDR Contact: N/A  
Data Release Frequency: No Update Planned

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### IHS OPEN DUMPS: Open Dumps on Indian Land

A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014  
Date Data Arrived at EDR: 08/06/2014  
Date Made Active in Reports: 01/29/2015  
Number of Days to Update: 176

Source: Department of Health & Human Services, Indian Health Service  
Telephone: 301-443-1452  
Last EDR Contact: 04/19/2024  
Next Scheduled EDR Contact: 08/04/2024  
Data Release Frequency: Varies

### Local Lists of Hazardous waste / Contaminated Sites

#### US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 12/31/2023  
Date Data Arrived at EDR: 02/21/2024  
Date Made Active in Reports: 04/04/2024  
Number of Days to Update: 43

Source: Drug Enforcement Administration  
Telephone: 202-307-1000  
Last EDR Contact: 05/21/2024  
Next Scheduled EDR Contact: 09/02/2024  
Data Release Frequency: No Update Planned

#### HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005  
Date Data Arrived at EDR: 08/03/2006  
Date Made Active in Reports: 08/24/2006  
Number of Days to Update: 21

Source: Department of Toxic Substance Control  
Telephone: 916-323-3400  
Last EDR Contact: 02/23/2009  
Next Scheduled EDR Contact: 05/25/2009  
Data Release Frequency: No Update Planned

#### SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 01/22/2024  
Date Data Arrived at EDR: 01/23/2024  
Date Made Active in Reports: 04/08/2024  
Number of Days to Update: 76

Source: Department of Toxic Substances Control  
Telephone: 916-323-3400  
Last EDR Contact: 04/23/2024  
Next Scheduled EDR Contact: 08/05/2024  
Data Release Frequency: Quarterly

#### CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2021  
Date Data Arrived at EDR: 09/28/2023  
Date Made Active in Reports: 12/18/2023  
Number of Days to Update: 81

Source: Department of Toxic Substances Control  
Telephone: 916-255-6504  
Last EDR Contact: 05/09/2024  
Next Scheduled EDR Contact: 08/12/2024  
Data Release Frequency: Varies

#### CERS HAZ WASTE: California Environmental Reporting System Hazardous Waste

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 01/16/2024  
Date Data Arrived at EDR: 01/16/2024  
Date Made Active in Reports: 04/03/2024  
Number of Days to Update: 78

Source: CalEPA  
Telephone: 916-323-2514  
Last EDR Contact: 04/16/2024  
Next Scheduled EDR Contact: 07/29/2024  
Data Release Frequency: Quarterly

### TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995  
Date Data Arrived at EDR: 08/30/1995  
Date Made Active in Reports: 09/26/1995  
Number of Days to Update: 27

Source: State Water Resources Control Board  
Telephone: 916-227-4364  
Last EDR Contact: 01/26/2009  
Next Scheduled EDR Contact: 04/27/2009  
Data Release Frequency: No Update Planned

### US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 12/31/2023  
Date Data Arrived at EDR: 02/21/2024  
Date Made Active in Reports: 04/04/2024  
Number of Days to Update: 43

Source: Drug Enforcement Administration  
Telephone: 202-307-1000  
Last EDR Contact: 05/21/2024  
Next Scheduled EDR Contact: 09/02/2024  
Data Release Frequency: Quarterly

### Local Lists of Registered Storage Tanks

#### SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994  
Date Data Arrived at EDR: 07/07/2005  
Date Made Active in Reports: 08/11/2005  
Number of Days to Update: 35

Source: State Water Resources Control Board  
Telephone: N/A  
Last EDR Contact: 06/03/2005  
Next Scheduled EDR Contact: N/A  
Data Release Frequency: No Update Planned

#### HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990  
Date Data Arrived at EDR: 01/25/1991  
Date Made Active in Reports: 02/12/1991  
Number of Days to Update: 18

Source: State Water Resources Control Board  
Telephone: 916-341-5851  
Last EDR Contact: 07/26/2001  
Next Scheduled EDR Contact: N/A  
Data Release Frequency: No Update Planned

#### SAN FRANCISCO AST: Aboveground Storage Tank Site Listing

Aboveground storage tank sites

Date of Government Version: 02/01/2024  
Date Data Arrived at EDR: 02/01/2024  
Date Made Active in Reports: 04/24/2024  
Number of Days to Update: 83

Source: San Francisco County Department of Public Health  
Telephone: 415-252-3896  
Last EDR Contact: 04/25/2024  
Next Scheduled EDR Contact: 08/12/2024  
Data Release Frequency: Varies



## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994  
Date Data Arrived at EDR: 09/05/1995  
Date Made Active in Reports: 09/29/1995  
Number of Days to Update: 24

Source: California Environmental Protection Agency  
Telephone: 916-341-5851  
Last EDR Contact: 12/28/1998  
Next Scheduled EDR Contact: N/A  
Data Release Frequency: No Update Planned

### CERS TANKS: California Environmental Reporting System (CERS) Tanks

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

Date of Government Version: 01/16/2024  
Date Data Arrived at EDR: 01/16/2024  
Date Made Active in Reports: 04/03/2024  
Number of Days to Update: 78

Source: California Environmental Protection Agency  
Telephone: 916-323-2514  
Last EDR Contact: 04/16/2024  
Next Scheduled EDR Contact: 07/29/2024  
Data Release Frequency: Quarterly

### Local Land Records

#### LIENS: Environmental Liens Listing

A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 02/26/2024  
Date Data Arrived at EDR: 02/27/2024  
Date Made Active in Reports: 05/15/2024  
Number of Days to Update: 78

Source: Department of Toxic Substances Control  
Telephone: 916-323-3400  
Last EDR Contact: 05/22/2024  
Next Scheduled EDR Contact: 09/09/2024  
Data Release Frequency: Varies

#### LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/29/2024  
Date Data Arrived at EDR: 03/01/2024  
Date Made Active in Reports: 03/27/2024  
Number of Days to Update: 26

Source: Environmental Protection Agency  
Telephone: 202-564-6023  
Last EDR Contact: 06/03/2024  
Next Scheduled EDR Contact: 07/08/2024  
Data Release Frequency: Semi-Annually

#### DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 02/26/2024  
Date Data Arrived at EDR: 02/27/2024  
Date Made Active in Reports: 05/14/2024  
Number of Days to Update: 77

Source: DTSC and SWRCB  
Telephone: 916-323-3400  
Last EDR Contact: 05/29/2024  
Next Scheduled EDR Contact: 09/09/2024  
Data Release Frequency: Semi-Annually

### Records of Emergency Release Reports

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

|                                         |                                           |
|-----------------------------------------|-------------------------------------------|
| Date of Government Version: 12/12/2023  | Source: U.S. Department of Transportation |
| Date Data Arrived at EDR: 12/13/2023    | Telephone: 202-366-4555                   |
| Date Made Active in Reports: 02/28/2024 | Last EDR Contact: 03/20/2024              |
| Number of Days to Update: 77            | Next Scheduled EDR Contact: 07/01/2024    |
|                                         | Data Release Frequency: Quarterly         |

### CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

|                                         |                                        |
|-----------------------------------------|----------------------------------------|
| Date of Government Version: 12/31/2023  | Source: Office of Emergency Services   |
| Date Data Arrived at EDR: 01/23/2024    | Telephone: 916-845-8400                |
| Date Made Active in Reports: 04/09/2024 | Last EDR Contact: 04/16/2024           |
| Number of Days to Update: 77            | Next Scheduled EDR Contact: 07/29/2024 |
|                                         | Data Release Frequency: Semi-Annually  |

### LDS: Land Disposal Sites Listing (GEOTRACKER)

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

|                                         |                                           |
|-----------------------------------------|-------------------------------------------|
| Date of Government Version: 03/04/2024  | Source: State Water Quality Control Board |
| Date Data Arrived at EDR: 03/05/2024    | Telephone: 866-480-1028                   |
| Date Made Active in Reports: 05/24/2024 | Last EDR Contact: 06/04/2024              |
| Number of Days to Update: 80            | Next Scheduled EDR Contact: 09/16/2024    |
|                                         | Data Release Frequency: Quarterly         |

### MCS: Military Cleanup Sites Listing (GEOTRACKER)

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

|                                         |                                             |
|-----------------------------------------|---------------------------------------------|
| Date of Government Version: 03/04/2024  | Source: State Water Resources Control Board |
| Date Data Arrived at EDR: 03/05/2024    | Telephone: 866-480-1028                     |
| Date Made Active in Reports: 05/24/2024 | Last EDR Contact: 06/04/2024                |
| Number of Days to Update: 80            | Next Scheduled EDR Contact: 09/16/2024      |
|                                         | Data Release Frequency: Quarterly           |

### SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

|                                         |                                           |
|-----------------------------------------|-------------------------------------------|
| Date of Government Version: 06/06/2012  | Source: FirstSearch                       |
| Date Data Arrived at EDR: 01/03/2013    | Telephone: N/A                            |
| Date Made Active in Reports: 02/22/2013 | Last EDR Contact: 01/03/2013              |
| Number of Days to Update: 50            | Next Scheduled EDR Contact: N/A           |
|                                         | Data Release Frequency: No Update Planned |

### Other Ascertainable Records

#### RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 12/04/2023  
Date Data Arrived at EDR: 12/06/2023  
Date Made Active in Reports: 12/12/2023  
Number of Days to Update: 6

Source: Environmental Protection Agency  
Telephone: (415) 495-8895  
Last EDR Contact: 03/19/2024  
Next Scheduled EDR Contact: 07/01/2024  
Data Release Frequency: Quarterly

### FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 01/30/2024  
Date Data Arrived at EDR: 02/13/2024  
Date Made Active in Reports: 04/04/2024  
Number of Days to Update: 51

Source: U.S. Army Corps of Engineers  
Telephone: 202-528-4285  
Last EDR Contact: 05/14/2024  
Next Scheduled EDR Contact: 08/26/2024  
Data Release Frequency: Varies

### DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 06/07/2021  
Date Data Arrived at EDR: 07/13/2021  
Date Made Active in Reports: 03/09/2022  
Number of Days to Update: 239

Source: USGS  
Telephone: 888-275-8747  
Last EDR Contact: 04/11/2024  
Next Scheduled EDR Contact: 07/22/2024  
Data Release Frequency: Varies

### FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 04/02/2018  
Date Data Arrived at EDR: 04/11/2018  
Date Made Active in Reports: 11/06/2019  
Number of Days to Update: 574

Source: U.S. Geological Survey  
Telephone: 888-275-8747  
Last EDR Contact: 04/04/2024  
Next Scheduled EDR Contact: 07/15/2024  
Data Release Frequency: N/A

### SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 07/30/2021  
Date Data Arrived at EDR: 02/03/2023  
Date Made Active in Reports: 02/10/2023  
Number of Days to Update: 7

Source: Environmental Protection Agency  
Telephone: 615-532-8599  
Last EDR Contact: 05/09/2024  
Next Scheduled EDR Contact: 08/19/2024  
Data Release Frequency: Varies

### US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 12/11/2023  
Date Data Arrived at EDR: 12/13/2023  
Date Made Active in Reports: 02/28/2024  
Number of Days to Update: 77

Source: Environmental Protection Agency  
Telephone: 202-566-1917  
Last EDR Contact: 03/13/2024  
Next Scheduled EDR Contact: 07/01/2024  
Data Release Frequency: Quarterly

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### EPA WATCH LIST: EPA Watch List

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013  
Date Data Arrived at EDR: 03/21/2014  
Date Made Active in Reports: 06/17/2014  
Number of Days to Update: 88

Source: Environmental Protection Agency  
Telephone: 617-520-3000  
Last EDR Contact: 04/29/2024  
Next Scheduled EDR Contact: 08/12/2024  
Data Release Frequency: No Update Planned

### 2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017  
Date Data Arrived at EDR: 05/08/2018  
Date Made Active in Reports: 07/20/2018  
Number of Days to Update: 73

Source: Environmental Protection Agency  
Telephone: 703-308-4044  
Last EDR Contact: 05/02/2024  
Next Scheduled EDR Contact: 08/12/2024  
Data Release Frequency: Varies

### TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2020  
Date Data Arrived at EDR: 06/14/2022  
Date Made Active in Reports: 03/24/2023  
Number of Days to Update: 283

Source: EPA  
Telephone: 202-260-5521  
Last EDR Contact: 03/14/2024  
Next Scheduled EDR Contact: 06/24/2024  
Data Release Frequency: Every 4 Years

### TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2022  
Date Data Arrived at EDR: 11/13/2023  
Date Made Active in Reports: 02/07/2024  
Number of Days to Update: 86

Source: EPA  
Telephone: 202-566-0250  
Last EDR Contact: 05/16/2024  
Next Scheduled EDR Contact: 08/26/2024  
Data Release Frequency: Annually

### SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 01/16/2024  
Date Data Arrived at EDR: 01/17/2024  
Date Made Active in Reports: 03/27/2024  
Number of Days to Update: 70

Source: EPA  
Telephone: 202-564-4203  
Last EDR Contact: 04/17/2024  
Next Scheduled EDR Contact: 07/29/2024  
Data Release Frequency: Annually

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 02/29/2024  
Date Data Arrived at EDR: 03/01/2024  
Date Made Active in Reports: 03/27/2024  
Number of Days to Update: 26

Source: EPA  
Telephone: 703-416-0223  
Last EDR Contact: 06/03/2024  
Next Scheduled EDR Contact: 09/09/2024  
Data Release Frequency: Annually

### RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 02/01/2024  
Date Data Arrived at EDR: 02/08/2024  
Date Made Active in Reports: 04/04/2024  
Number of Days to Update: 56

Source: Environmental Protection Agency  
Telephone: 202-564-8600  
Last EDR Contact: 04/15/2024  
Next Scheduled EDR Contact: 07/29/2024  
Data Release Frequency: Varies

### RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995  
Date Data Arrived at EDR: 07/03/1995  
Date Made Active in Reports: 08/07/1995  
Number of Days to Update: 35

Source: EPA  
Telephone: 202-564-4104  
Last EDR Contact: 06/02/2008  
Next Scheduled EDR Contact: 09/01/2008  
Data Release Frequency: No Update Planned

### PRP: Potentially Responsible Parties

A listing of verified Potentially Responsible Parties

Date of Government Version: 09/19/2023  
Date Data Arrived at EDR: 10/03/2023  
Date Made Active in Reports: 10/19/2023  
Number of Days to Update: 16

Source: EPA  
Telephone: 202-564-6023  
Last EDR Contact: 06/03/2024  
Next Scheduled EDR Contact: 08/12/2024  
Data Release Frequency: Quarterly

### PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 03/20/2023  
Date Data Arrived at EDR: 04/04/2023  
Date Made Active in Reports: 06/09/2023  
Number of Days to Update: 66

Source: EPA  
Telephone: 202-566-0500  
Last EDR Contact: 04/04/2024  
Next Scheduled EDR Contact: 07/15/2024  
Data Release Frequency: Annually

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

|                                         |                                         |
|-----------------------------------------|-----------------------------------------|
| Date of Government Version: 11/18/2016  | Source: Environmental Protection Agency |
| Date Data Arrived at EDR: 11/23/2016    | Telephone: 202-564-2501                 |
| Date Made Active in Reports: 02/10/2017 | Last EDR Contact: 03/28/2024            |
| Number of Days to Update: 79            | Next Scheduled EDR Contact: 07/15/2024  |
|                                         | Data Release Frequency: Quarterly       |

### FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

|                                         |                                                                   |
|-----------------------------------------|-------------------------------------------------------------------|
| Date of Government Version: 04/09/2009  | Source: EPA/Office of Prevention, Pesticides and Toxic Substances |
| Date Data Arrived at EDR: 04/16/2009    | Telephone: 202-566-1667                                           |
| Date Made Active in Reports: 05/11/2009 | Last EDR Contact: 08/18/2017                                      |
| Number of Days to Update: 25            | Next Scheduled EDR Contact: 12/04/2017                            |
|                                         | Data Release Frequency: No Update Planned                         |

### FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

|                                         |                                           |
|-----------------------------------------|-------------------------------------------|
| Date of Government Version: 04/09/2009  | Source: EPA                               |
| Date Data Arrived at EDR: 04/16/2009    | Telephone: 202-566-1667                   |
| Date Made Active in Reports: 05/11/2009 | Last EDR Contact: 08/18/2017              |
| Number of Days to Update: 25            | Next Scheduled EDR Contact: 12/04/2017    |
|                                         | Data Release Frequency: No Update Planned |

### MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

|                                         |                                        |
|-----------------------------------------|----------------------------------------|
| Date of Government Version: 01/02/2024  | Source: Nuclear Regulatory Commission  |
| Date Data Arrived at EDR: 01/16/2024    | Telephone: 301-415-0717                |
| Date Made Active in Reports: 03/13/2024 | Last EDR Contact: 04/15/2024           |
| Number of Days to Update: 57            | Next Scheduled EDR Contact: 07/29/2024 |
|                                         | Data Release Frequency: Quarterly      |

### COAL ASH DOE: Steam-Electric Plant Operation Data

A listing of power plants that store ash in surface ponds.

|                                         |                                        |
|-----------------------------------------|----------------------------------------|
| Date of Government Version: 12/31/2022  | Source: Department of Energy           |
| Date Data Arrived at EDR: 11/27/2023    | Telephone: 202-586-8719                |
| Date Made Active in Reports: 02/22/2024 | Last EDR Contact: 05/28/2024           |
| Number of Days to Update: 87            | Next Scheduled EDR Contact: 09/09/2024 |
|                                         | Data Release Frequency: Varies         |

### COAL ASH EPA: Coal Combustion Residues Surface Impoundments List

A listing of coal combustion residues surface impoundments with high hazard potential ratings.

|                                         |                                         |
|-----------------------------------------|-----------------------------------------|
| Date of Government Version: 01/12/2017  | Source: Environmental Protection Agency |
| Date Data Arrived at EDR: 03/05/2019    | Telephone: N/A                          |
| Date Made Active in Reports: 11/11/2019 | Last EDR Contact: 05/28/2024            |
| Number of Days to Update: 251           | Next Scheduled EDR Contact: 09/09/2024  |
|                                         | Data Release Frequency: Varies          |

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### PCB TRANSFORMER: PCB Transformer Registration Database

The database of PCB transformer registrations that includes all PCB registration submittals.

|                                         |                                         |
|-----------------------------------------|-----------------------------------------|
| Date of Government Version: 09/13/2019  | Source: Environmental Protection Agency |
| Date Data Arrived at EDR: 11/06/2019    | Telephone: 202-566-0517                 |
| Date Made Active in Reports: 02/10/2020 | Last EDR Contact: 05/02/2024            |
| Number of Days to Update: 96            | Next Scheduled EDR Contact: 08/12/2024  |
|                                         | Data Release Frequency: Varies          |

### RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

|                                         |                                         |
|-----------------------------------------|-----------------------------------------|
| Date of Government Version: 07/01/2019  | Source: Environmental Protection Agency |
| Date Data Arrived at EDR: 07/01/2019    | Telephone: 202-343-9775                 |
| Date Made Active in Reports: 09/23/2019 | Last EDR Contact: 03/25/2024            |
| Number of Days to Update: 84            | Next Scheduled EDR Contact: 07/08/2024  |
|                                         | Data Release Frequency: Quarterly       |

### HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

|                                         |                                           |
|-----------------------------------------|-------------------------------------------|
| Date of Government Version: 10/19/2006  | Source: Environmental Protection Agency   |
| Date Data Arrived at EDR: 03/01/2007    | Telephone: 202-564-2501                   |
| Date Made Active in Reports: 04/10/2007 | Last EDR Contact: 12/17/2007              |
| Number of Days to Update: 40            | Next Scheduled EDR Contact: 03/17/2008    |
|                                         | Data Release Frequency: No Update Planned |

### HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

|                                         |                                           |
|-----------------------------------------|-------------------------------------------|
| Date of Government Version: 10/19/2006  | Source: Environmental Protection Agency   |
| Date Data Arrived at EDR: 03/01/2007    | Telephone: 202-564-2501                   |
| Date Made Active in Reports: 04/10/2007 | Last EDR Contact: 12/17/2008              |
| Number of Days to Update: 40            | Next Scheduled EDR Contact: 03/17/2008    |
|                                         | Data Release Frequency: No Update Planned |

### DOT OPS: Incident and Accident Data

Department of Transportation, Office of Pipeline Safety Incident and Accident data.

|                                         |                                                                 |
|-----------------------------------------|-----------------------------------------------------------------|
| Date of Government Version: 01/02/2020  | Source: Department of Transportation, Office of Pipeline Safety |
| Date Data Arrived at EDR: 01/28/2020    | Telephone: 202-366-4595                                         |
| Date Made Active in Reports: 04/17/2020 | Last EDR Contact: 04/23/2024                                    |
| Number of Days to Update: 80            | Next Scheduled EDR Contact: 08/05/2024                          |
|                                         | Data Release Frequency: Quarterly                               |

### CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 12/31/2023  
Date Data Arrived at EDR: 01/11/2024  
Date Made Active in Reports: 01/16/2024  
Number of Days to Update: 5

Source: Department of Justice, Consent Decree Library  
Telephone: Varies  
Last EDR Contact: 03/28/2024  
Next Scheduled EDR Contact: 07/15/2024  
Data Release Frequency: Varies

### BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2021  
Date Data Arrived at EDR: 03/09/2023  
Date Made Active in Reports: 03/20/2023  
Number of Days to Update: 11

Source: EPA/NTIS  
Telephone: 800-424-9346  
Last EDR Contact: 03/19/2024  
Next Scheduled EDR Contact: 07/01/2024  
Data Release Frequency: Biennially

### INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014  
Date Data Arrived at EDR: 07/14/2015  
Date Made Active in Reports: 01/10/2017  
Number of Days to Update: 546

Source: USGS  
Telephone: 202-208-3710  
Last EDR Contact: 04/04/2024  
Next Scheduled EDR Contact: 07/15/2024  
Data Release Frequency: Semi-Annually

### FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 03/03/2023  
Date Data Arrived at EDR: 03/03/2023  
Date Made Active in Reports: 06/09/2023  
Number of Days to Update: 98

Source: Department of Energy  
Telephone: 202-586-3559  
Last EDR Contact: 04/26/2024  
Next Scheduled EDR Contact: 08/12/2024  
Data Release Frequency: Varies

### UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 08/30/2019  
Date Data Arrived at EDR: 11/15/2019  
Date Made Active in Reports: 01/28/2020  
Number of Days to Update: 74

Source: Department of Energy  
Telephone: 505-845-0011  
Last EDR Contact: 05/16/2024  
Next Scheduled EDR Contact: 08/26/2024  
Data Release Frequency: Varies

### LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 02/29/2024  
Date Data Arrived at EDR: 03/01/2024  
Date Made Active in Reports: 03/27/2024  
Number of Days to Update: 26

Source: Environmental Protection Agency  
Telephone: 703-603-8787  
Last EDR Contact: 06/03/2024  
Next Scheduled EDR Contact: 07/08/2024  
Data Release Frequency: Varies

### LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931 and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust



## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 04/05/2001  
Date Data Arrived at EDR: 10/27/2010  
Date Made Active in Reports: 12/02/2010  
Number of Days to Update: 36

Source: American Journal of Public Health  
Telephone: 703-305-6451  
Last EDR Contact: 12/02/2009  
Next Scheduled EDR Contact: N/A  
Data Release Frequency: No Update Planned

### US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016  
Date Data Arrived at EDR: 10/26/2016  
Date Made Active in Reports: 02/03/2017  
Number of Days to Update: 100

Source: EPA  
Telephone: 202-564-2496  
Last EDR Contact: 09/26/2017  
Next Scheduled EDR Contact: 01/08/2018  
Data Release Frequency: Annually

### US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016  
Date Data Arrived at EDR: 10/26/2016  
Date Made Active in Reports: 02/03/2017  
Number of Days to Update: 100

Source: EPA  
Telephone: 202-564-2496  
Last EDR Contact: 09/26/2017  
Next Scheduled EDR Contact: 01/08/2018  
Data Release Frequency: Annually

### MINES VIOLATIONS: MSHA Violation Assessment Data

Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 01/02/2024  
Date Data Arrived at EDR: 01/03/2024  
Date Made Active in Reports: 01/04/2024  
Number of Days to Update: 1

Source: DOL, Mine Safety & Health Admini  
Telephone: 202-693-9424  
Last EDR Contact: 04/04/2024  
Next Scheduled EDR Contact: 09/02/2024  
Data Release Frequency: Quarterly

### US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/05/2024  
Date Data Arrived at EDR: 02/21/2024  
Date Made Active in Reports: 04/04/2024  
Number of Days to Update: 43

Source: Department of Labor, Mine Safety and Health Administration  
Telephone: 303-231-5959  
Last EDR Contact: 05/21/2024  
Next Scheduled EDR Contact: 09/02/2024  
Data Release Frequency: Semi-Annually

### US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 01/07/2022  
Date Data Arrived at EDR: 02/24/2023  
Date Made Active in Reports: 05/17/2023  
Number of Days to Update: 82

Source: USGS  
Telephone: 703-648-7709  
Last EDR Contact: 05/22/2024  
Next Scheduled EDR Contact: 09/02/2024  
Data Release Frequency: Varies

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

|                                         |                                        |
|-----------------------------------------|----------------------------------------|
| Date of Government Version: 04/14/2011  | Source: USGS                           |
| Date Data Arrived at EDR: 06/08/2011    | Telephone: 703-648-7709                |
| Date Made Active in Reports: 09/13/2011 | Last EDR Contact: 05/23/2024           |
| Number of Days to Update: 97            | Next Scheduled EDR Contact: 09/02/2024 |
|                                         | Data Release Frequency: Varies         |

### ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

|                                         |                                        |
|-----------------------------------------|----------------------------------------|
| Date of Government Version: 11/28/2023  | Source: Department of Interior         |
| Date Data Arrived at EDR: 11/29/2023    | Telephone: 202-208-2609                |
| Date Made Active in Reports: 12/11/2023 | Last EDR Contact: 05/30/2024           |
| Number of Days to Update: 12            | Next Scheduled EDR Contact: 09/16/2024 |
|                                         | Data Release Frequency: Quarterly      |

### MINES MRDS: Mineral Resources Data System Mineral Resources Data System

|                                         |                                        |
|-----------------------------------------|----------------------------------------|
| Date of Government Version: 08/23/2022  | Source: USGS                           |
| Date Data Arrived at EDR: 11/22/2022    | Telephone: 703-648-6533                |
| Date Made Active in Reports: 02/28/2023 | Last EDR Contact: 05/22/2024           |
| Number of Days to Update: 98            | Next Scheduled EDR Contact: 09/02/2024 |
|                                         | Data Release Frequency: Varies         |

### FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

|                                         |                                        |
|-----------------------------------------|----------------------------------------|
| Date of Government Version: 02/09/2024  | Source: EPA                            |
| Date Data Arrived at EDR: 02/27/2024    | Telephone: (415) 947-8000              |
| Date Made Active in Reports: 05/24/2024 | Last EDR Contact: 05/29/2024           |
| Number of Days to Update: 87            | Next Scheduled EDR Contact: 09/09/2024 |
|                                         | Data Release Frequency: Quarterly      |

### ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

|                                         |                                         |
|-----------------------------------------|-----------------------------------------|
| Date of Government Version: 12/17/2023  | Source: Environmental Protection Agency |
| Date Data Arrived at EDR: 12/28/2023    | Telephone: 202-564-2280                 |
| Date Made Active in Reports: 03/04/2024 | Last EDR Contact: 04/04/2024            |
| Number of Days to Update: 67            | Next Scheduled EDR Contact: 07/15/2024  |
|                                         | Data Release Frequency: Quarterly       |

### UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 09/06/2023  
Date Data Arrived at EDR: 09/13/2023  
Date Made Active in Reports: 12/11/2023  
Number of Days to Update: 89

Source: Department of Defense  
Telephone: 703-704-1564  
Last EDR Contact: 04/08/2024  
Next Scheduled EDR Contact: 07/22/2024  
Data Release Frequency: Varies

### DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/06/2021  
Date Data Arrived at EDR: 05/21/2021  
Date Made Active in Reports: 08/11/2021  
Number of Days to Update: 82

Source: Environmental Protection Agency  
Telephone: 202-564-0527  
Last EDR Contact: 05/17/2024  
Next Scheduled EDR Contact: 09/02/2024  
Data Release Frequency: Varies

### FUELS PROGRAM: EPA Fuels Program Registered Listing

This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 02/12/2024  
Date Data Arrived at EDR: 02/13/2024  
Date Made Active in Reports: 04/04/2024  
Number of Days to Update: 51

Source: EPA  
Telephone: 800-385-6164  
Last EDR Contact: 05/14/2024  
Next Scheduled EDR Contact: 08/26/2024  
Data Release Frequency: Quarterly

### PFAS NPL: Superfund Sites with PFAS Detections Information

EPA's Office of Land and Emergency Management and EPA Regional Offices maintain data describing what is known about site investigations, contamination, and remedial actions under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) where PFAS is present in the environment.

Date of Government Version: 12/28/2023  
Date Data Arrived at EDR: 12/28/2023  
Date Made Active in Reports: 03/04/2024  
Number of Days to Update: 67

Source: Environmental Protection Agency  
Telephone: 703-603-8895  
Last EDR Contact: 04/05/2024  
Next Scheduled EDR Contact: 07/15/2024  
Data Release Frequency: Varies

### PFAS FEDERAL SITES: Federal Sites PFAS Information

Several federal entities, such as the federal Superfund program, Department of Defense, National Aeronautics and Space Administration, Department of Transportation, and Department of Energy provided information for sites with known or suspected detections at federal facilities.

Date of Government Version: 12/28/2023  
Date Data Arrived at EDR: 12/28/2023  
Date Made Active in Reports: 03/04/2024  
Number of Days to Update: 67

Source: Environmental Protection Agency  
Telephone: 202-272-0167  
Last EDR Contact: 04/05/2024  
Next Scheduled EDR Contact: 07/15/2024  
Data Release Frequency: Varies

### PFAS TRIS: List of PFAS Added to the TRI

Section 7321 of the National Defense Authorization Act for Fiscal Year 2020 (NDAA) immediately added certain per- and polyfluoroalkyl substances (PFAS) to the list of chemicals covered by the Toxics Release Inventory (TRI) under Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) and provided a framework for additional PFAS to be added to TRI on an annual basis.

Date of Government Version: 12/28/2023  
Date Data Arrived at EDR: 12/28/2023  
Date Made Active in Reports: 01/04/2024  
Number of Days to Update: 7

Source: Environmental Protection Agency  
Telephone: 202-566-0250  
Last EDR Contact: 04/05/2024  
Next Scheduled EDR Contact: 07/15/2024  
Data Release Frequency: Varies

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### PFAS TSCA: PFAS Manufacture and Imports Information

EPA issued the Chemical Data Reporting (CDR) Rule under the Toxic Substances Control Act (TSCA) and requires chemical manufacturers and facilities that manufacture or import chemical substances to report data to EPA. EPA publishes non-confidential business information (non-CBI) and includes descriptive information about each site, corporate parent, production volume, other manufacturing information, and processing and use information.

|                                         |                                         |
|-----------------------------------------|-----------------------------------------|
| Date of Government Version: 12/28/2023  | Source: Environmental Protection Agency |
| Date Data Arrived at EDR: 12/28/2023    | Telephone: 202-272-0167                 |
| Date Made Active in Reports: 01/04/2024 | Last EDR Contact: 04/05/2024            |
| Number of Days to Update: 7             | Next Scheduled EDR Contact: 07/15/2024  |
|                                         | Data Release Frequency: Varies          |

### PFAS RCRA MANIFEST: PFAS Transfers Identified In the RCRA Database Listing

To work around the lack of PFAS waste codes in the RCRA database, EPA developed the PFAS Transfers dataset by mining e-Manifest records containing at least one of these common PFAS keywords: PFAS, PFOA, PFOS, PERFL, AFFF, GENX, GEN-X (plus the VT waste codes). These keywords were searched for in the following text fields: Manifest handling instructions (MANIFEST\_HANDLING\_INSTR), Non-hazardous waste description (NON\_HAZ\_WASTE\_DESCRIPTION), DOT printed information (DOT\_PRINTED\_INFORMATION), Waste line handling instructions (WASTE\_LINE\_HANDLING\_INSTR), Waste residue comments (WASTE\_RESIDUE\_COMMENTS).

|                                         |                                         |
|-----------------------------------------|-----------------------------------------|
| Date of Government Version: 12/28/2023  | Source: Environmental Protection Agency |
| Date Data Arrived at EDR: 12/28/2023    | Telephone: 202-272-0167                 |
| Date Made Active in Reports: 01/04/2024 | Last EDR Contact: 04/05/2024            |
| Number of Days to Update: 7             | Next Scheduled EDR Contact: 07/15/2024  |
|                                         | Data Release Frequency: Varies          |

### PFAS ATSDR: PFAS Contamination Site Location Listing

PFAS contamination site locations from the Department of Health & Human Services, Center for Disease Control & Prevention. ATSDR is involved at a number of PFAS-related sites, either directly or through assisting state and federal partners. As of now, most sites are related to drinking water contamination connected with PFAS production facilities or fire training areas where aqueous film-forming firefighting foam (AFFF) was regularly used.

|                                         |                                               |
|-----------------------------------------|-----------------------------------------------|
| Date of Government Version: 06/24/2020  | Source: Department of Health & Human Services |
| Date Data Arrived at EDR: 03/17/2021    | Telephone: 202-741-5770                       |
| Date Made Active in Reports: 11/08/2022 | Last EDR Contact: 04/22/2024                  |
| Number of Days to Update: 601           | Next Scheduled EDR Contact: 08/05/2024        |
|                                         | Data Release Frequency: Varies                |

### PFAS WQP: Ambient Environmental Sampling for PFAS

The Water Quality Portal (WQP) is a part of a modernized repository storing ambient sampling data for all environmental media and tissue samples. A wide range of federal, state, tribal and local governments, academic and non-governmental organizations and individuals submit project details and sampling results to this public repository. The information is commonly used for research and assessments of environmental quality.

|                                         |                                         |
|-----------------------------------------|-----------------------------------------|
| Date of Government Version: 12/28/2023  | Source: Environmental Protection Agency |
| Date Data Arrived at EDR: 12/28/2023    | Telephone: 202-272-0167                 |
| Date Made Active in Reports: 03/04/2024 | Last EDR Contact: 04/05/2024            |
| Number of Days to Update: 67            | Next Scheduled EDR Contact: 07/15/2024  |
|                                         | Data Release Frequency: Varies          |

### PFAS NPDES: Clean Water Act Discharge Monitoring Information

Any discharger of pollutants to waters of the United States from a point source must have a National Pollutant Discharge Elimination System (NPDES) permit. The process for obtaining limits involves the regulated entity (permittee) disclosing releases in a NPDES permit application and the permitting authority (typically the state but sometimes EPA) deciding whether to require monitoring or monitoring with limits. Caveats and Limitations: Less than half of states have required PFAS monitoring for at least one of their permittees and fewer states have established PFAS effluent limits for permittees. New rulemakings have been initiated that may increase the number of facilities monitoring for PFAS in the future.

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 12/28/2023  
Date Data Arrived at EDR: 12/28/2023  
Date Made Active in Reports: 03/04/2024  
Number of Days to Update: 67

Source: Environmental Protection Agency  
Telephone: 202-272-0167  
Last EDR Contact: 04/05/2024  
Next Scheduled EDR Contact: 07/15/2024  
Data Release Frequency: Varies

### PFAS ECHO: Facilities in Industries that May Be Handling PFAS Listing

Regulators and the public have expressed interest in knowing which regulated entities may be using PFAS. EPA has developed a dataset from various sources that show which industries may be handling PFAS. Approximately 120,000 facilities subject to federal environmental programs have operated or currently operate in industry sectors with processes that may involve handling and/or release of PFAS.

Date of Government Version: 12/28/2023  
Date Data Arrived at EDR: 12/28/2023  
Date Made Active in Reports: 03/04/2024  
Number of Days to Update: 67

Source: Environmental Protection Agency  
Telephone: 202-272-0167  
Last EDR Contact: 04/05/2024  
Next Scheduled EDR Contact: 07/15/2024  
Data Release Frequency: Varies

### PFAS ECHO FIRE TRAIN: Facilities in Industries that May Be Handling PFAS Listing

A list of fire training sites was added to the Industry Sectors dataset using a keyword search on the permitted facility's name to identify sites where fire-fighting foam may have been used in training exercises. Additionally, you may view an example spreadsheet of the subset of fire training facility data, as well as the keywords used in selecting or deselecting a facility for the subset. as well as the keywords used in selecting or deselecting a facility for the subset. These keywords were tested to maximize accuracy in selecting facilities that may use fire-fighting foam in training exercises, however, due to the lack of a required reporting field in the data systems for designating fire training sites, this methodology may not identify all fire training sites or may potentially misidentify them.

Date of Government Version: 12/28/2023  
Date Data Arrived at EDR: 12/28/2023  
Date Made Active in Reports: 03/04/2024  
Number of Days to Update: 67

Source: Environmental Protection Agency  
Telephone: 202-272-0167  
Last EDR Contact: 04/05/2024  
Next Scheduled EDR Contact: 07/15/2024  
Data Release Frequency: Varies

### PFAS PT 139 AIRPORT: All Certified Part 139 Airports PFAS Information Listing

Since July 1, 2006, all certified part 139 airports are required to have fire-fighting foam onsite that meet military specifications (MIL-F-24385) (14 CFR 139.317). To date, these military specification fire-fighting foams are fluorinated and have been historically used for training and extinguishing. The 2018 FAA Reauthorization Act has a provision stating that no later than October 2021, FAA shall not require the use of fluorinated AFFF. This provision does not prohibit the use of fluorinated AFFF at Part 139 civilian airports; it only prohibits FAA from mandating its use. The Federal Aviation Administration's document AC 150/5210-6D - Aircraft Fire Extinguishing Agents provides guidance on Aircraft Fire Extinguishing Agents, which includes Aqueous Film Forming Foam (AFFF).

Date of Government Version: 12/28/2023  
Date Data Arrived at EDR: 12/28/2023  
Date Made Active in Reports: 03/04/2024  
Number of Days to Update: 67

Source: Environmental Protection Agency  
Telephone: 202-272-0167  
Last EDR Contact: 04/05/2024  
Next Scheduled EDR Contact: 07/15/2024  
Data Release Frequency: Varies

### AQUEOUS FOAM NRC: Aqueous Foam Related Incidents Listing

The National Response Center (NRC) serves as an emergency call center that fields initial reports for pollution and railroad incidents and forwards that information to appropriate federal/state agencies for response. The spreadsheets posted to the NRC website contain initial incident data that has not been validated or investigated by a federal/state response agency. Response center calls from 1990 to the most recent complete calendar year where there was indication of Aqueous Film Forming Foam (AFFF) usage are included in this dataset. NRC calls may reference AFFF usage in the ?Material Involved? or ?Incident Description? fields.

Date of Government Version: 12/28/2023  
Date Data Arrived at EDR: 12/28/2023  
Date Made Active in Reports: 03/04/2024  
Number of Days to Update: 67

Source: Environmental Protection Agency  
Telephone: 202-267-2675  
Last EDR Contact: 04/05/2024  
Next Scheduled EDR Contact: 07/15/2024  
Data Release Frequency: Varies

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### PCS ENF: Enforcement data

No description is available for this data

Date of Government Version: 12/31/2014  
Date Data Arrived at EDR: 02/05/2015  
Date Made Active in Reports: 03/06/2015  
Number of Days to Update: 29

Source: EPA  
Telephone: 202-564-2497  
Last EDR Contact: 03/29/2024  
Next Scheduled EDR Contact: 07/15/2024  
Data Release Frequency: Varies

### PCS: Permit Compliance System

PCS is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

Date of Government Version: 12/16/2016  
Date Data Arrived at EDR: 01/06/2017  
Date Made Active in Reports: 03/10/2017  
Number of Days to Update: 63

Source: EPA, Office of Water  
Telephone: 202-564-2496  
Last EDR Contact: 03/29/2024  
Next Scheduled EDR Contact: 07/15/2024  
Data Release Frequency: No Update Planned

### BIOSOLIDS: ICIS-NPDES Biosolids Facility Data

The data reflects compliance information about facilities in the biosolids program.

Date of Government Version: 12/31/2023  
Date Data Arrived at EDR: 01/03/2024  
Date Made Active in Reports: 01/16/2024  
Number of Days to Update: 13

Source: Environmental Protection Agency  
Telephone: 202-564-4700  
Last EDR Contact: 04/16/2024  
Next Scheduled EDR Contact: 07/29/2024  
Data Release Frequency: Varies

### PFAS: PFAS Contamination Site Location Listing

A listing of PFAS sites included in the Envirostor and GeoTracker databases. Locations of potential sources of per - and polyfluoroalkyl substances (PFAS). This does not mean that PFAS has been produced, used, or discharged at these sites.

Date of Government Version: 03/04/2024  
Date Data Arrived at EDR: 03/06/2024  
Date Made Active in Reports: 05/29/2024  
Number of Days to Update: 84

Source: State Water Resources Control Board  
Telephone: 866-480-1028  
Last EDR Contact: 06/04/2024  
Next Scheduled EDR Contact: 09/16/2024  
Data Release Frequency: Varies

### AQUEOUS FOAM: Former Fire Training Facility Assessments Listing

Airports shown on this list are those believed to use Aqueous Film Forming Foam (AFFF), and certified by the Federal Aviation Administration (FAA) under Title 14, Code of Federal Regulations (CFR), Part 139 (14 CFR Part 139). This list was created by SWRCB using information available from the FAA. Location points shown are from the latitude and longitude listed on the FAA airport master record.

Date of Government Version: 03/04/2024  
Date Data Arrived at EDR: 03/05/2024  
Date Made Active in Reports: 05/28/2024  
Number of Days to Update: 84

Source: State Water Resources Control Board  
Telephone: 916-341-5455  
Last EDR Contact: 06/04/2024  
Next Scheduled EDR Contact: 09/16/2024  
Data Release Frequency: Varies

### CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989  
Date Data Arrived at EDR: 07/27/1994  
Date Made Active in Reports: 08/02/1994  
Number of Days to Update: 6

Source: Department of Health Services  
Telephone: 916-255-2118  
Last EDR Contact: 05/31/1994  
Next Scheduled EDR Contact: N/A  
Data Release Frequency: No Update Planned

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### CHROME PLATING: Chrome Plating Facilities Listing

This listing represents chrome plating facilities the California State Water Resources Control Board staff identified as possibly being a source of Per- and polyfluoroalkyl substance (PFAS) contamination. Sites and locations were identified by staff with the Division of Water Quality in the California State Water Board. Data was collected from the CA Air Resources Board 2013 and 2018 - Cr VI emission survey, CA Emission Inventory, CA HAZ Waste discharge database and by reviewing storm water permits. Former chrome plating sites are also included that are open site investigation or remediation cases with the Regional Water Quality Control Boards and the Department of Toxic Substances Control.

Date of Government Version: 03/04/2024  
Date Data Arrived at EDR: 03/05/2024  
Date Made Active in Reports: 05/28/2024  
Number of Days to Update: 84

Source: State Water Resources Control Board  
Telephone: 916-341-5455  
Last EDR Contact: 06/04/2024  
Next Scheduled EDR Contact: 09/16/2024  
Data Release Frequency: Varies

### CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 12/13/2023  
Date Data Arrived at EDR: 12/13/2023  
Date Made Active in Reports: 03/07/2024  
Number of Days to Update: 85

Source: CAL EPA/Office of Emergency Information  
Telephone: 916-323-3400  
Last EDR Contact: 03/19/2024  
Next Scheduled EDR Contact: 07/01/2024  
Data Release Frequency: Quarterly

### CUPA LIV-PLE: CUPA Facility Listing

list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 02/14/2024  
Date Data Arrived at EDR: 02/21/2024  
Date Made Active in Reports: 05/08/2024  
Number of Days to Update: 77

Source: Livermore-Pleasanton Fire Department  
Telephone: 925-454-2361  
Last EDR Contact: 05/09/2024  
Next Scheduled EDR Contact: 08/19/2024  
Data Release Frequency: Varies

### DRYCLEAN VENTURA: Drycleaner Facility Listing

A listing of drycleaner facility locations, for the Ventura County Air Pollution Control District.

Date of Government Version: 01/04/2024  
Date Data Arrived at EDR: 01/16/2024  
Date Made Active in Reports: 02/08/2024  
Number of Days to Update: 23

Source: Ventura County Air Pollution Control District  
Telephone: 805-645-1421  
Last EDR Contact: 01/03/2024  
Next Scheduled EDR Contact: 09/11/2023  
Data Release Frequency: Varies

### DRYCLEAN AMADOR: Amador Air District Drycleaner Facility Listing

A listing of drycleaner facility locations, for the Amador Air Quality Management District

Date of Government Version: 04/26/2023  
Date Data Arrived at EDR: 04/27/2023  
Date Made Active in Reports: 07/13/2023  
Number of Days to Update: 77

Source: Amador Air Quality Management District  
Telephone: 209-257-0112  
Last EDR Contact: 01/03/2024  
Next Scheduled EDR Contact: 09/11/2023  
Data Release Frequency: Varies

### DRYCLEAN SOUTH COAST: South Coast Air Quality Management District Drycleaner Listing

A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 02/20/2024  
Date Data Arrived at EDR: 02/22/2024  
Date Made Active in Reports: 05/08/2024  
Number of Days to Update: 76

Source: South Coast Air Quality Management District  
Telephone: 909-396-3211  
Last EDR Contact: 05/17/2024  
Next Scheduled EDR Contact: 09/02/2024  
Data Release Frequency: Varies

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

**DRYCLEAN MOJAVE:** Mojave Desert Air Quality Management District Drycleaner Facility Listing  
A listing of drycleaner facility locations, for the Mojave Desert Air Quality Management District.

|                                         |                                                       |
|-----------------------------------------|-------------------------------------------------------|
| Date of Government Version: 04/15/2024  | Source: Mojave Desert Air Quality Management District |
| Date Data Arrived at EDR: 04/17/2024    | Telephone: 760-245-1661                               |
| Date Made Active in Reports: 04/24/2024 | Last EDR Contact: 04/16/2024                          |
| Number of Days to Update: 7             | Next Scheduled EDR Contact: 09/11/2023                |
|                                         | Data Release Frequency: Varies                        |

**DRYCLEAN BUTTE:** Butte County Air Quality Management District Drycleaner Facility Listing  
Butte County Air Quality Management District Drycleaner Facility Listing.

|                                         |                                                      |
|-----------------------------------------|------------------------------------------------------|
| Date of Government Version: 04/25/2023  | Source: Butte County Air Quality Management District |
| Date Data Arrived at EDR: 10/18/2023    | Telephone: 530-332-9400                              |
| Date Made Active in Reports: 01/16/2024 | Last EDR Contact: 01/03/2024                         |
| Number of Days to Update: 90            | Next Scheduled EDR Contact: 09/11/2023               |
|                                         | Data Release Frequency: Varies                       |

**DRYCLEAN FEATHER RVR:** Feather River Air Quality Management District Drycleaner Facility Listing  
A listing of drycleaner facility locations, for the Feather River Air Quality Management District.

|                                         |                                                       |
|-----------------------------------------|-------------------------------------------------------|
| Date of Government Version: 03/08/2023  | Source: Feather River Air Quality Management District |
| Date Data Arrived at EDR: 03/09/2023    | Telephone: 530-634-7659                               |
| Date Made Active in Reports: 06/05/2023 | Last EDR Contact: 01/03/2024                          |
| Number of Days to Update: 88            | Next Scheduled EDR Contact: 09/11/2023                |
|                                         | Data Release Frequency: Varies                        |

**DRYCLEAN SAN DIEGO:** San Diego County Air Pollution Control District Drycleaner Facility Listing  
A listing of drycleaner facility locations, for the San Diego County Air Pollution Control District.

|                                         |                                                         |
|-----------------------------------------|---------------------------------------------------------|
| Date of Government Version: 03/19/2024  | Source: San Diego County Air Pollution Control District |
| Date Data Arrived at EDR: 03/21/2024    | Telephone: 858-586-2616                                 |
| Date Made Active in Reports: 04/12/2024 | Last EDR Contact: 03/19/2024                            |
| Number of Days to Update: 22            | Next Scheduled EDR Contact: 09/11/2023                  |
|                                         | Data Release Frequency: Varies                          |

**DRYCLEANERS:** Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

|                                         |                                               |
|-----------------------------------------|-----------------------------------------------|
| Date of Government Version: 04/02/2024  | Source: Department of Toxic Substance Control |
| Date Data Arrived at EDR: 04/05/2024    | Telephone: 916-327-4498                       |
| Date Made Active in Reports: 04/15/2024 | Last EDR Contact: 05/22/2024                  |
| Number of Days to Update: 10            | Next Scheduled EDR Contact: 09/09/2024        |
|                                         | Data Release Frequency: Annually              |

**DRYCLEAN GRANT:** Grant Recipients List

Assembly Bill 998 (AB 998) established the Non-Toxic Dry Cleaning Incentive Program to provide financial assistance to the dry cleaning industry to switch from systems using perchloroethylene (Perc), an identified toxic air contaminant and potential human carcinogen, to non-toxic and non-smog forming alternatives.

|                                         |                                        |
|-----------------------------------------|----------------------------------------|
| Date of Government Version: 12/31/2021  | Source: California Air Resources Board |
| Date Data Arrived at EDR: 01/26/2024    | Telephone: 916-323-0006                |
| Date Made Active in Reports: 04/16/2024 | Last EDR Contact: 04/25/2024           |
| Number of Days to Update: 81            | Next Scheduled EDR Contact: 08/05/2024 |
|                                         | Data Release Frequency: Varies         |



## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### DRYCLEAN LAKE: Lake County Air Quality Management District Drycleaner Facility Listing

A listing of drycleaner facility locations, for the Lake County Air Quality Management District,

Date of Government Version: 02/15/2024  
Date Data Arrived at EDR: 02/16/2024  
Date Made Active in Reports: 05/02/2024  
Number of Days to Update: 76

Source: Lake County Air Quality Management District  
Telephone: 707-263-7000  
Last EDR Contact: 01/03/2024  
Next Scheduled EDR Contact: 09/11/2023  
Data Release Frequency: Varies

### DRYCLEAN AVAQMD: Antelope Valley Air Quality Management District Drycleaner Listing

A listing of dry cleaners in the Antelope Valley Air Quality Management District.

Date of Government Version: 02/26/2024  
Date Data Arrived at EDR: 02/27/2024  
Date Made Active in Reports: 05/15/2024  
Number of Days to Update: 78

Source: Antelope Valley Air Quality Management District  
Telephone: 661-723-8070  
Last EDR Contact: 05/22/2024  
Next Scheduled EDR Contact: 09/09/2024  
Data Release Frequency: Varies

### DRYCLEAN MENDOCINO: Mendocino County Air Quality Management District Drycleaner Facility Listing

A listing of drycleaner facility locations, for the Mendocino County Air Quality Management District.

Date of Government Version: 02/26/2024  
Date Data Arrived at EDR: 02/28/2024  
Date Made Active in Reports: 05/15/2024  
Number of Days to Update: 77

Source: Mendocino County Air Quality Management District  
Telephone: 707-463-4354  
Last EDR Contact: 01/03/2024  
Next Scheduled EDR Contact: 09/11/2023  
Data Release Frequency: Varies

### DRYCLEAN EAST KERN: Eastern Kern Air Pollution Control District District Drycleaner Facility Listing

A listing of drycleaner facility locations, for the Eastern Kern Air Pollution Control District.

Date of Government Version: 01/12/2023  
Date Data Arrived at EDR: 04/26/2023  
Date Made Active in Reports: 07/14/2023  
Number of Days to Update: 79

Source: Eastern Kern Air Pollution Control District  
Telephone: 661-862-9684  
Last EDR Contact: 01/03/2024  
Next Scheduled EDR Contact: 09/11/2023  
Data Release Frequency: Varies

### DRYCLEAN IMPERIAL: Imperial County Air Pollution Control District Drycleaner Facility Listing

A listing of drycleaner facility locations, for the Imperial County Air Pollution Control District

Date of Government Version: 04/25/2023  
Date Data Arrived at EDR: 04/26/2023  
Date Made Active in Reports: 07/14/2023  
Number of Days to Update: 79

Source: Imperial County Air Pollution Control District  
Telephone: 442-265-1800  
Last EDR Contact: 01/03/2024  
Next Scheduled EDR Contact: 09/11/2023  
Data Release Frequency: Varies

### DRYCLEAN YOLO-SOLANO: Yolo-Solano Air Quality Management District Drycleaner Facility Listing

A listing of drycleaner facility locations, for the Yolo-Solano Air Quality Management District.

Date of Government Version: 01/04/2024  
Date Data Arrived at EDR: 01/05/2024  
Date Made Active in Reports: 03/20/2024  
Number of Days to Update: 75

Source: Yolo-Solano Air Quality Management District  
Telephone: 530-757-3650  
Last EDR Contact: 01/03/2024  
Next Scheduled EDR Contact: 09/11/2023  
Data Release Frequency: Varies

### DRYCLEAN SHASTA: Shasta County Air Quality Management District District Drycleaner Facility Listing

A listing of drycleaner facility locations, for the Shasta County Air Quality Management District.

Date of Government Version: 04/26/2023  
Date Data Arrived at EDR: 04/27/2023  
Date Made Active in Reports: 07/14/2023  
Number of Days to Update: 78

Source: Shasta County Air Quality Management District  
Telephone: 530-225-5674  
Last EDR Contact: 01/03/2024  
Next Scheduled EDR Contact: 09/11/2023  
Data Release Frequency: Varies

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

**DRYCLEAN MONTEREY BAY:** Monterey Bay Air Quality Management District Drycleaner Facility Listing  
A listing of drycleaner facility locations, for the Monterey Bay Air Quality Management District.

|                                         |                                                      |
|-----------------------------------------|------------------------------------------------------|
| Date of Government Version: 01/03/2024  | Source: Monterey Bay Air Quality Management District |
| Date Data Arrived at EDR: 01/05/2024    | Telephone: 831-647-9411                              |
| Date Made Active in Reports: 03/20/2024 | Last EDR Contact: 01/03/2024                         |
| Number of Days to Update: 75            | Next Scheduled EDR Contact: 09/11/2023               |
|                                         | Data Release Frequency: Varies                       |

**DRYCLEAN SAN LUIS OB:** San Luis Obispo County Air Pollution Control District Drycleaner Facility Listing  
A listing of drycleaner facility locations, for the San Luis Obispo County Air Pollution Control District.

|                                         |                                                               |
|-----------------------------------------|---------------------------------------------------------------|
| Date of Government Version: 01/03/2024  | Source: San Luis Obispo County Air Pollution Control District |
| Date Data Arrived at EDR: 01/04/2024    | Telephone: 805-781-5756                                       |
| Date Made Active in Reports: 03/20/2024 | Last EDR Contact: 01/03/2024                                  |
| Number of Days to Update: 76            | Next Scheduled EDR Contact: 09/11/2023                        |
|                                         | Data Release Frequency: Varies                                |

**DRYCLEAN PLACER:** Placer County Air Quality Management District Drycleaner Facility Listing  
A listing of drycleaner facility locations, for the Placer County Air Quality Management District.

|                                         |                                                       |
|-----------------------------------------|-------------------------------------------------------|
| Date of Government Version: 05/15/2023  | Source: Placer County Air Quality Management District |
| Date Data Arrived at EDR: 05/17/2023    | Telephone: 530-745-2335                               |
| Date Made Active in Reports: 08/14/2023 | Last EDR Contact: 01/03/2024                          |
| Number of Days to Update: 89            | Next Scheduled EDR Contact: 09/11/2023                |
|                                         | Data Release Frequency: Varies                        |

**DRYCLEAN SAN JOAQUIN:** San Joaquin Valley Air Pollution Control District District Drycleaner Facility Listing  
A listing of drycleaner facility locations, for the San Joaquin Valley Air Pollution Control District.

|                                         |                                                           |
|-----------------------------------------|-----------------------------------------------------------|
| Date of Government Version: 01/04/2024  | Source: San Joaquin Valley Air Pollution Control District |
| Date Data Arrived at EDR: 01/04/2024    | Telephone: 559-230-6001                                   |
| Date Made Active in Reports: 03/21/2024 | Last EDR Contact: 01/03/2024                              |
| Number of Days to Update: 77            | Next Scheduled EDR Contact: 09/11/2023                    |
|                                         | Data Release Frequency: Varies                            |

**DRYCLEAN BAY AREA:** Bay Area Air Quality Management District Drycleaner Facility Listing  
Bay Area Air Quality Management District Drycleaner Facility Listing.

|                                         |                                                  |
|-----------------------------------------|--------------------------------------------------|
| Date of Government Version: 02/20/2019  | Source: Bay Area Air Quality Management District |
| Date Data Arrived at EDR: 05/30/2019    | Telephone: 415-516-1916                          |
| Date Made Active in Reports: 05/01/2023 | Last EDR Contact: 01/03/2024                     |
| Number of Days to Update: 1432          | Next Scheduled EDR Contact: 09/11/2023           |
|                                         | Data Release Frequency: Varies                   |

**DRYCLEAN CALAVERAS:** Calaveras County Environmental Management Agency Drycleaner Facility Listing  
A listing of drycleaner facility locations, for the Calaveras County Environmental Management Agency.

|                                         |                                                          |
|-----------------------------------------|----------------------------------------------------------|
| Date of Government Version: 06/17/2019  | Source: Calaveras County Environmental Management Agency |
| Date Data Arrived at EDR: 06/19/2019    | Telephone: 209-754-6399                                  |
| Date Made Active in Reports: 05/01/2023 | Last EDR Contact: 01/03/2024                             |
| Number of Days to Update: 1412          | Next Scheduled EDR Contact: 09/16/2019                   |
|                                         | Data Release Frequency: Varies                           |

**DRYCLEAN N COAST:** North Coast Unified Air Quality Management District Drycleaner Facility Listing  
A listing of drycleaner facility locations, for the North Coast Unified Air Quality Management District.

|                                         |                                                             |
|-----------------------------------------|-------------------------------------------------------------|
| Date of Government Version: 11/30/2016  | Source: North Coast Unified Air Quality Management District |
| Date Data Arrived at EDR: 04/19/2019    | Telephone: 707-443-3093                                     |
| Date Made Active in Reports: 05/01/2023 | Last EDR Contact: 01/03/2024                                |
| Number of Days to Update: 1473          | Next Scheduled EDR Contact: 09/11/2023                      |
|                                         | Data Release Frequency: Varies                              |

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

**DRYCLEAN N SIERRA:** Northern Sierra Air Quality Management District Drycleaner Facility Listing  
A listing of drycleaner facility locations, for the Northern Sierra Air Quality Management District,

|                                         |                                                         |
|-----------------------------------------|---------------------------------------------------------|
| Date of Government Version: 05/07/2019  | Source: Northern Sierra Air Quality Management District |
| Date Data Arrived at EDR: 05/07/2019    | Telephone: 530-274-9350                                 |
| Date Made Active in Reports: 05/01/2023 | Last EDR Contact: 01/03/2024                            |
| Number of Days to Update: 1455          | Next Scheduled EDR Contact: 09/11/2023                  |
|                                         | Data Release Frequency: Varies                          |

**DRYCLEAN SANTA BARB:** Santa Barbara County Air Pollution Control District Drycleaner Facility Listing  
A listing of drycleaner facility locations, for the Santa Barbara County Air Pollution Control District.

|                                         |                                                             |
|-----------------------------------------|-------------------------------------------------------------|
| Date of Government Version: 02/19/2019  | Source: Santa Barbara County Air Pollution Control District |
| Date Data Arrived at EDR: 04/17/2019    | Telephone: 805-961-8867                                     |
| Date Made Active in Reports: 05/01/2023 | Last EDR Contact: 01/03/2024                                |
| Number of Days to Update: 1475          | Next Scheduled EDR Contact: 09/11/2023                      |
|                                         | Data Release Frequency: Varies                              |

**DRYCLEAN TEHAMA:** Tehama County Air Pollution Control District Drycleaner Facility Listing  
A listing of drycleaner facility locations, for the Tehama County Air Pollution Control District.

|                                         |                                                      |
|-----------------------------------------|------------------------------------------------------|
| Date of Government Version: 04/24/2019  | Source: Tehama County Air Pollution Control District |
| Date Data Arrived at EDR: 04/24/2019    | Telephone: 530-527-3717                              |
| Date Made Active in Reports: 05/01/2023 | Last EDR Contact: 01/03/2024                         |
| Number of Days to Update: 1468          | Next Scheduled EDR Contact: 09/11/2023               |
|                                         | Data Release Frequency: Varies                       |

**DRYCLEAN GLENN:** Glenn County Air Pollution Control District Drycleaner Facility Listing  
A listing of drycleaner facility locations, for the Glenn County Air Pollution Control District.

|                                         |                                                     |
|-----------------------------------------|-----------------------------------------------------|
| Date of Government Version: 01/08/2024  | Source: Glenn County Air Pollution Control District |
| Date Data Arrived at EDR: 01/10/2024    | Telephone: 530-934-6500                             |
| Date Made Active in Reports: 03/27/2024 | Last EDR Contact: 01/03/2024                        |
| Number of Days to Update: 77            | Next Scheduled EDR Contact: 09/11/2023              |
|                                         | Data Release Frequency: Varies                      |

**DRYCLEAN N SONOMA:** Norther Sonoma County County Air Pollution Control District Drycleaner Facility Listing  
A listing of drycleaner facility locations, for the Northern Sonoma County Air Pollution Control District.,

|                                         |                                                             |
|-----------------------------------------|-------------------------------------------------------------|
| Date of Government Version: 01/05/2024  | Source: Santa Barbara County Air Pollution Control District |
| Date Data Arrived at EDR: 01/10/2024    | Telephone: 707-433-5911                                     |
| Date Made Active in Reports: 03/27/2024 | Last EDR Contact: 01/03/2024                                |
| Number of Days to Update: 77            | Next Scheduled EDR Contact: 09/11/2023                      |
|                                         | Data Release Frequency: Varies                              |

**DRYCLEAN SACRAMENTO:** Sacramento Metropolitan Air Quality Management District Drycleaner Facility Listing  
A listing of drycleaner facility locations, for the Sacramento Metropolitan Air Quality Management District.

|                                         |                                                                 |
|-----------------------------------------|-----------------------------------------------------------------|
| Date of Government Version: 01/03/2024  | Source: Sacramento Metropolitan Air Quality Management District |
| Date Data Arrived at EDR: 01/10/2024    | Telephone: 916-874-3958                                         |
| Date Made Active in Reports: 03/27/2024 | Last EDR Contact: 01/03/2024                                    |
| Number of Days to Update: 77            | Next Scheduled EDR Contact: 09/11/2023                          |
|                                         | Data Release Frequency: Varies                                  |

**EMI:** Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

|                                         |                                        |
|-----------------------------------------|----------------------------------------|
| Date of Government Version: 12/31/2021  | Source: California Air Resources Board |
| Date Data Arrived at EDR: 06/09/2023    | Telephone: 916-322-2990                |
| Date Made Active in Reports: 08/30/2023 | Last EDR Contact: 03/14/2024           |
| Number of Days to Update: 82            | Next Scheduled EDR Contact: 06/24/2024 |
|                                         | Data Release Frequency: Varies         |

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### ENF: Enforcement Action Listing

A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 01/16/2024  
Date Data Arrived at EDR: 01/16/2024  
Date Made Active in Reports: 04/03/2024  
Number of Days to Update: 78

Source: State Water Resources Control Board  
Telephone: 916-445-9379  
Last EDR Contact: 04/16/2024  
Next Scheduled EDR Contact: 07/29/2024  
Data Release Frequency: Varies

### FIN ASSURANCE 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 01/11/2024  
Date Data Arrived at EDR: 01/16/2024  
Date Made Active in Reports: 04/03/2024  
Number of Days to Update: 78

Source: Department of Toxic Substances Control  
Telephone: 916-255-3628  
Last EDR Contact: 04/12/2024  
Next Scheduled EDR Contact: 07/29/2024  
Data Release Frequency: Varies

### FIN ASSURANCE 2: Financial Assurance Information Listing

A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 02/07/2024  
Date Data Arrived at EDR: 02/28/2024  
Date Made Active in Reports: 05/15/2024  
Number of Days to Update: 77

Source: California Integrated Waste Management Board  
Telephone: 916-341-6066  
Last EDR Contact: 05/02/2024  
Next Scheduled EDR Contact: 08/19/2024  
Data Release Frequency: Varies

### ICE: Inspection, Compliance and Enforcement

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 02/07/2024  
Date Data Arrived at EDR: 02/07/2024  
Date Made Active in Reports: 02/07/2024  
Number of Days to Update: 0

Source: Department of Toxic Substances Control  
Telephone: 877-786-9427  
Last EDR Contact: 05/14/2024  
Next Scheduled EDR Contact: 08/26/2024  
Data Release Frequency: Quarterly

### HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001  
Date Data Arrived at EDR: 01/22/2009  
Date Made Active in Reports: 04/08/2009  
Number of Days to Update: 76

Source: Department of Toxic Substances Control  
Telephone: 916-323-3400  
Last EDR Contact: 01/22/2009  
Next Scheduled EDR Contact: N/A  
Data Release Frequency: No Update Planned

### HWP: EnviroStor Permitted Facilities Listing

Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 02/07/2024  
Date Data Arrived at EDR: 02/07/2024  
Date Made Active in Reports: 02/07/2024  
Number of Days to Update: 0

Source: Department of Toxic Substances Control  
Telephone: 916-323-3400  
Last EDR Contact: 05/14/2024  
Next Scheduled EDR Contact: 08/26/2024  
Data Release Frequency: Quarterly

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### HWT: Registered Hazardous Waste Transporter Database

A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 01/02/2024  
Date Data Arrived at EDR: 01/03/2024  
Date Made Active in Reports: 03/21/2024  
Number of Days to Update: 78

Source: Department of Toxic Substances Control  
Telephone: 916-440-7145  
Last EDR Contact: 04/04/2024  
Next Scheduled EDR Contact: 07/15/2024  
Data Release Frequency: Quarterly

### HWTS: Hazardous Waste Tracking System

DTSC maintains the Hazardous Waste Tracking System that stores ID number information since the early 1980s and manifest data since 1993. The system collects both manifest copies from the generator and destination facility.

Date of Government Version: 01/26/2024  
Date Data Arrived at EDR: 01/30/2024  
Date Made Active in Reports: 04/17/2024  
Number of Days to Update: 78

Source: Department of Toxic Substances Control  
Telephone: 916-324-2444  
Last EDR Contact: 05/09/2024  
Next Scheduled EDR Contact: 07/15/2024  
Data Release Frequency: Varies

### HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2023  
Date Data Arrived at EDR: 01/03/2024  
Date Made Active in Reports: 03/21/2024  
Number of Days to Update: 78

Source: California Environmental Protection Agency  
Telephone: 916-255-1136  
Last EDR Contact: 04/04/2024  
Next Scheduled EDR Contact: 07/15/2024  
Data Release Frequency: Annually

### MINES: Mines Site Location Listing

A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 03/04/2024  
Date Data Arrived at EDR: 03/05/2024  
Date Made Active in Reports: 05/28/2024  
Number of Days to Update: 84

Source: Department of Conservation  
Telephone: 916-322-1080  
Last EDR Contact: 06/04/2024  
Next Scheduled EDR Contact: 09/16/2024  
Data Release Frequency: Quarterly

### MWMP: Medical Waste Management Program Listing

The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 01/23/2024  
Date Data Arrived at EDR: 02/27/2024  
Date Made Active in Reports: 05/16/2024  
Number of Days to Update: 79

Source: Department of Public Health  
Telephone: 916-558-1784  
Last EDR Contact: 05/29/2024  
Next Scheduled EDR Contact: 09/09/2024  
Data Release Frequency: Varies

### NPDES: NPDES Permits Listing

A listing of NPDES permits, including stormwater.

Date of Government Version: 02/05/2024  
Date Data Arrived at EDR: 02/06/2024  
Date Made Active in Reports: 04/25/2024  
Number of Days to Update: 79

Source: State Water Resources Control Board  
Telephone: 916-445-9379  
Last EDR Contact: 05/07/2024  
Next Scheduled EDR Contact: 08/19/2024  
Data Release Frequency: Quarterly

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### PEST LIC: Pesticide Regulation Licenses Listing

A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 02/26/2024  
Date Data Arrived at EDR: 02/27/2024  
Date Made Active in Reports: 05/17/2024  
Number of Days to Update: 80

Source: Department of Pesticide Regulation  
Telephone: 916-445-4038  
Last EDR Contact: 05/29/2024  
Next Scheduled EDR Contact: 09/09/2024  
Data Release Frequency: Quarterly

### PROC: Certified Processors Database

A listing of certified processors.

Date of Government Version: 03/04/2024  
Date Data Arrived at EDR: 03/05/2024  
Date Made Active in Reports: 05/28/2024  
Number of Days to Update: 84

Source: Department of Conservation  
Telephone: 916-323-3836  
Last EDR Contact: 06/04/2024  
Next Scheduled EDR Contact: 09/16/2024  
Data Release Frequency: Quarterly

### NOTIFY 65: Proposition 65 Records

Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 03/08/2024  
Date Data Arrived at EDR: 03/08/2024  
Date Made Active in Reports: 05/29/2024  
Number of Days to Update: 82

Source: State Water Resources Control Board  
Telephone: 916-445-3846  
Last EDR Contact: 03/08/2024  
Next Scheduled EDR Contact: 06/24/2024  
Data Release Frequency: No Update Planned

### SAN JOSE HAZMAT: Hazardous Material Facilities

Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 11/03/2020  
Date Data Arrived at EDR: 11/05/2020  
Date Made Active in Reports: 01/26/2021  
Number of Days to Update: 82

Source: City of San Jose Fire Department  
Telephone: 408-535-7694  
Last EDR Contact: 04/25/2024  
Next Scheduled EDR Contact: 08/12/2024  
Data Release Frequency: Annually

### UIC: UIC Listing

A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 03/04/2024  
Date Data Arrived at EDR: 03/05/2024  
Date Made Active in Reports: 05/28/2024  
Number of Days to Update: 84

Source: Department of Conservation  
Telephone: 916-445-2408  
Last EDR Contact: 06/04/2024  
Next Scheduled EDR Contact: 09/16/2024  
Data Release Frequency: Varies

### UIC GEO: Underground Injection Control Sites (GEOTRACKER)

Underground control injection sites

Date of Government Version: 03/04/2024  
Date Data Arrived at EDR: 03/05/2024  
Date Made Active in Reports: 05/24/2024  
Number of Days to Update: 80

Source: State Water Resource Control Board  
Telephone: 866-480-1028  
Last EDR Contact: 06/04/2024  
Next Scheduled EDR Contact: 09/16/2024  
Data Release Frequency: Varies

### WASTEWATER PITS: Oil Wastewater Pits Listing

Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water boards review found that more than one-third of the region's active disposal pits are operating without permission.

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 02/11/2021  
Date Data Arrived at EDR: 07/01/2021  
Date Made Active in Reports: 09/29/2021  
Number of Days to Update: 90

Source: RWQCB, Central Valley Region  
Telephone: 559-445-5577  
Last EDR Contact: 04/04/2024  
Next Scheduled EDR Contact: 07/15/2024  
Data Release Frequency: Varies

### WDS: Waste Discharge System

Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007  
Date Data Arrived at EDR: 06/20/2007  
Date Made Active in Reports: 06/29/2007  
Number of Days to Update: 9

Source: State Water Resources Control Board  
Telephone: 916-341-5227  
Last EDR Contact: 05/09/2024  
Next Scheduled EDR Contact: 08/26/2024  
Data Release Frequency: No Update Planned

### WIP: Well Investigation Program Case List

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009  
Date Data Arrived at EDR: 07/21/2009  
Date Made Active in Reports: 08/03/2009  
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board  
Telephone: 213-576-6726  
Last EDR Contact: 03/15/2024  
Next Scheduled EDR Contact: 07/01/2024  
Data Release Frequency: No Update Planned

### MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)

Military privatized sites

Date of Government Version: 03/04/2024  
Date Data Arrived at EDR: 03/05/2024  
Date Made Active in Reports: 05/24/2024  
Number of Days to Update: 80

Source: State Water Resources Control Board  
Telephone: 866-480-1028  
Last EDR Contact: 06/04/2024  
Next Scheduled EDR Contact: 09/16/2024  
Data Release Frequency: Varies

### PROJECT: Project Sites (GEOTRACKER)

Projects sites

Date of Government Version: 03/04/2024  
Date Data Arrived at EDR: 03/05/2024  
Date Made Active in Reports: 05/24/2024  
Number of Days to Update: 80

Source: State Water Resources Control Board  
Telephone: 866-480-1028  
Last EDR Contact: 06/04/2024  
Next Scheduled EDR Contact: 09/16/2024  
Data Release Frequency: Varies

### WDR: Waste Discharge Requirements Listing

In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the "Non Chapter 15 (Non 15) Program") regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Date of Government Version: 03/04/2024  
Date Data Arrived at EDR: 03/05/2024  
Date Made Active in Reports: 05/28/2024  
Number of Days to Update: 84

Source: State Water Resources Control Board  
Telephone: 916-341-5810  
Last EDR Contact: 06/04/2024  
Next Scheduled EDR Contact: 09/16/2024  
Data Release Frequency: Quarterly

### CIWQS: California Integrated Water Quality System

The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 02/26/2024  
Date Data Arrived at EDR: 02/27/2024  
Date Made Active in Reports: 05/14/2024  
Number of Days to Update: 77

Source: State Water Resources Control Board  
Telephone: 866-794-4977  
Last EDR Contact: 05/29/2024  
Next Scheduled EDR Contact: 09/09/2024  
Data Release Frequency: Varies

### CERS: CalEPA Regulated Site Portal Data

The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

Date of Government Version: 01/16/2024  
Date Data Arrived at EDR: 01/16/2024  
Date Made Active in Reports: 04/03/2024  
Number of Days to Update: 78

Source: California Environmental Protection Agency  
Telephone: 916-323-2514  
Last EDR Contact: 04/16/2024  
Next Scheduled EDR Contact: 07/29/2024  
Data Release Frequency: Varies

### NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)

Non-Case Information sites

Date of Government Version: 03/04/2024  
Date Data Arrived at EDR: 03/05/2024  
Date Made Active in Reports: 05/24/2024  
Number of Days to Update: 80

Source: State Water Resources Control Board  
Telephone: 866-480-1028  
Last EDR Contact: 06/04/2024  
Next Scheduled EDR Contact: 09/16/2024  
Data Release Frequency: Varies

### OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)

Other Oil & Gas Projects sites

Date of Government Version: 03/04/2024  
Date Data Arrived at EDR: 03/05/2024  
Date Made Active in Reports: 05/24/2024  
Number of Days to Update: 80

Source: State Water Resources Control Board  
Telephone: 866-480-1028  
Last EDR Contact: 06/04/2024  
Next Scheduled EDR Contact: 09/16/2024  
Data Release Frequency: Varies

### PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)

Produced water ponds sites

Date of Government Version: 03/04/2024  
Date Data Arrived at EDR: 03/05/2024  
Date Made Active in Reports: 05/24/2024  
Number of Days to Update: 80

Source: State Water Resources Control Board  
Telephone: 866-480-1028  
Last EDR Contact: 06/04/2024  
Next Scheduled EDR Contact: 09/16/2024  
Data Release Frequency: Varies

### SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)

Sampling point - public sites

Date of Government Version: 03/04/2024  
Date Data Arrived at EDR: 03/05/2024  
Date Made Active in Reports: 05/24/2024  
Number of Days to Update: 80

Source: State Water Resources Control Board  
Telephone: 866-480-1028  
Last EDR Contact: 06/04/2024  
Next Scheduled EDR Contact: 09/16/2024  
Data Release Frequency: Varies

### WELL STIM PROJ: Well Stimulation Project (GEOTRACKER)

Includes areas of groundwater monitoring plans, a depiction of the monitoring network, and the facilities, boundaries, and subsurface characteristics of the oilfield and the features (oil and gas wells, produced water ponds, UIC wells, water supply wells, etc?) being monitored



## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 03/04/2024  
Date Data Arrived at EDR: 03/05/2024  
Date Made Active in Reports: 05/24/2024  
Number of Days to Update: 80

Source: State Water Resources Control Board  
Telephone: 866-480-1028  
Last EDR Contact: 06/04/2024  
Next Scheduled EDR Contact: 09/16/2024  
Data Release Frequency: Varies

### UST FINDER RELEASE: UST Finder Releases Database

US EPA's UST Finder data is a national composite of leaking underground storage tanks. This data contains information about, and locations of, leaking underground storage tanks. Data was collected from state sources and standardized into a national profile by EPA's Office of Underground Storage Tanks, Office of Research and Development, and the Association of State and Territorial Solid Waste Management Officials.

Date of Government Version: 06/08/2023  
Date Data Arrived at EDR: 10/31/2023  
Date Made Active in Reports: 01/18/2024  
Number of Days to Update: 79

Source: Environmental Protection Agency  
Telephone: 202-564-0394  
Last EDR Contact: 05/08/2024  
Next Scheduled EDR Contact: 08/19/2024  
Data Release Frequency: Semi-Annually

### UST FINDER: UST Finder Database

EPA developed UST Finder, a web map application containing a comprehensive, state-sourced national map of underground storage tank (UST) and leaking UST (LUST) data. It provides the attributes and locations of active and closed USTs, UST facilities, and LUST sites from states and from Tribal lands and US territories. UST Finder contains information about proximity of UST facilities and LUST sites to: surface and groundwater public drinking water protection areas; estimated number of private domestic wells and number of people living nearby; and flooding and wildfires.

Date of Government Version: 06/08/2023  
Date Data Arrived at EDR: 10/04/2023  
Date Made Active in Reports: 01/18/2024  
Number of Days to Update: 106

Source: Environmental Protection Agency  
Telephone: 202-564-0394  
Last EDR Contact: 05/08/2024  
Next Scheduled EDR Contact: 08/19/2024  
Data Release Frequency: Varies

## **EDR HIGH RISK HISTORICAL RECORDS**

### ***EDR Exclusive Records***

#### EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A  
Date Data Arrived at EDR: N/A  
Date Made Active in Reports: N/A  
Number of Days to Update: N/A

Source: EDR, Inc.  
Telephone: N/A  
Last EDR Contact: N/A  
Next Scheduled EDR Contact: N/A  
Data Release Frequency: No Update Planned

#### EDR Hist Auto: EDR Exclusive Historical Auto Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: N/A  
Date Data Arrived at EDR: N/A  
Date Made Active in Reports: N/A  
Number of Days to Update: N/A

Source: EDR, Inc.  
Telephone: N/A  
Last EDR Contact: N/A  
Next Scheduled EDR Contact: N/A  
Data Release Frequency: Varies

### EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A  
Date Data Arrived at EDR: N/A  
Date Made Active in Reports: N/A  
Number of Days to Update: N/A

Source: EDR, Inc.  
Telephone: N/A  
Last EDR Contact: N/A  
Next Scheduled EDR Contact: N/A  
Data Release Frequency: Varies

### EDR RECOVERED GOVERNMENT ARCHIVES

#### ***Exclusive Recovered Govt. Archives***

#### RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A  
Date Data Arrived at EDR: 07/01/2013  
Date Made Active in Reports: 01/13/2014  
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery  
Telephone: N/A  
Last EDR Contact: 06/01/2012  
Next Scheduled EDR Contact: N/A  
Data Release Frequency: Varies

#### RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A  
Date Data Arrived at EDR: 07/01/2013  
Date Made Active in Reports: 12/30/2013  
Number of Days to Update: 182

Source: State Water Resources Control Board  
Telephone: N/A  
Last EDR Contact: 06/01/2012  
Next Scheduled EDR Contact: N/A  
Data Release Frequency: Varies

### COUNTY RECORDS

#### ALAMEDA COUNTY:

#### CS ALAMEDA: Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 01/09/2019  
Date Data Arrived at EDR: 01/11/2019  
Date Made Active in Reports: 03/05/2019  
Number of Days to Update: 53

Source: Alameda County Environmental Health Services  
Telephone: 510-567-6700  
Last EDR Contact: 03/28/2024  
Next Scheduled EDR Contact: 07/15/2024  
Data Release Frequency: Semi-Annually

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### UST ALAMEDA: Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 12/26/2023  
Date Data Arrived at EDR: 12/26/2023  
Date Made Active in Reports: 03/19/2024  
Number of Days to Update: 84

Source: Alameda County Environmental Health Services  
Telephone: 510-567-6700  
Last EDR Contact: 03/28/2024  
Next Scheduled EDR Contact: 07/15/2024  
Data Release Frequency: Semi-Annually

### AMADOR COUNTY:

#### CUPA AMADOR: CUPA Facility List Cupa Facility List

Date of Government Version: 04/27/2023  
Date Data Arrived at EDR: 04/27/2023  
Date Made Active in Reports: 07/13/2023  
Number of Days to Update: 77

Source: Amador County Environmental Health  
Telephone: 209-223-6439  
Last EDR Contact: 04/25/2024  
Next Scheduled EDR Contact: 08/12/2024  
Data Release Frequency: Varies

### BUTTE COUNTY:

#### CUPA BUTTE: CUPA Facility Listing Cupa facility list.

Date of Government Version: 04/21/2017  
Date Data Arrived at EDR: 04/25/2017  
Date Made Active in Reports: 08/09/2017  
Number of Days to Update: 106

Source: Public Health Department  
Telephone: 530-538-7149  
Last EDR Contact: 03/28/2024  
Next Scheduled EDR Contact: 07/15/2024  
Data Release Frequency: No Update Planned

### CALVERAS COUNTY:

#### CUPA CALVERAS: CUPA Facility Listing Cupa Facility Listing

Date of Government Version: 12/18/2023  
Date Data Arrived at EDR: 12/18/2023  
Date Made Active in Reports: 03/13/2024  
Number of Days to Update: 86

Source: Calveras County Environmental Health  
Telephone: 209-754-6399  
Last EDR Contact: 03/15/2024  
Next Scheduled EDR Contact: 07/01/2024  
Data Release Frequency: Quarterly

### COLUSA COUNTY:

#### CUPA COLUSA: CUPA Facility List Cupa facility list.

Date of Government Version: 04/06/2020  
Date Data Arrived at EDR: 04/23/2020  
Date Made Active in Reports: 07/10/2020  
Number of Days to Update: 78

Source: Health & Human Services  
Telephone: 530-458-0396  
Last EDR Contact: 04/25/2024  
Next Scheduled EDR Contact: 08/12/2024  
Data Release Frequency: Semi-Annually

### CONTRA COSTA COUNTY:

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### SL CONTRA COSTA: Site List

List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 01/19/2024  
Date Data Arrived at EDR: 01/24/2024  
Date Made Active in Reports: 04/09/2024  
Number of Days to Update: 76

Source: Contra Costa Health Services Department  
Telephone: 925-646-2286  
Last EDR Contact: 04/19/2024  
Next Scheduled EDR Contact: 08/05/2024  
Data Release Frequency: Semi-Annually

### DEL NORTE COUNTY:

#### CUPA DEL NORTE: CUPA Facility List Cupa Facility list

Date of Government Version: 02/05/2024  
Date Data Arrived at EDR: 02/08/2024  
Date Made Active in Reports: 04/26/2024  
Number of Days to Update: 78

Source: Del Norte County Environmental Health Division  
Telephone: 707-465-0426  
Last EDR Contact: 04/19/2024  
Next Scheduled EDR Contact: 08/05/2024  
Data Release Frequency: Varies

### EL DORADO COUNTY:

#### CUPA EL DORADO: CUPA Facility List CUPA facility list.

Date of Government Version: 08/08/2022  
Date Data Arrived at EDR: 08/09/2022  
Date Made Active in Reports: 09/01/2022  
Number of Days to Update: 23

Source: El Dorado County Environmental Management Department  
Telephone: 530-621-6623  
Last EDR Contact: 04/19/2024  
Next Scheduled EDR Contact: 08/05/2024  
Data Release Frequency: Varies

### FRESNO COUNTY:

#### CUPA FRESNO: CUPA Resources List

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 06/28/2021  
Date Data Arrived at EDR: 12/21/2021  
Date Made Active in Reports: 03/03/2022  
Number of Days to Update: 72

Source: Dept. of Community Health  
Telephone: 559-445-3271  
Last EDR Contact: 03/28/2024  
Next Scheduled EDR Contact: 07/08/2024  
Data Release Frequency: Semi-Annually

### GLENN COUNTY:

#### CUPA GLENN: CUPA Facility List Cupa facility list

Date of Government Version: 01/22/2018  
Date Data Arrived at EDR: 01/24/2018  
Date Made Active in Reports: 03/14/2018  
Number of Days to Update: 49

Source: Glenn County Air Pollution Control District  
Telephone: 830-934-6500  
Last EDR Contact: 04/12/2024  
Next Scheduled EDR Contact: 07/29/2024  
Data Release Frequency: No Update Planned

### HUMBOLDT COUNTY:

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### CUPA HUMBOLDT: CUPA Facility List CUPA facility list.

Date of Government Version: 08/12/2021  
Date Data Arrived at EDR: 08/12/2021  
Date Made Active in Reports: 11/08/2021  
Number of Days to Update: 88

Source: Humboldt County Environmental Health  
Telephone: N/A  
Last EDR Contact: 05/09/2024  
Next Scheduled EDR Contact: 08/26/2024  
Data Release Frequency: Semi-Annually

### IMPERIAL COUNTY:

#### CUPA IMPERIAL: CUPA Facility List Cupa facility list.

Date of Government Version: 01/17/2024  
Date Data Arrived at EDR: 01/18/2024  
Date Made Active in Reports: 04/03/2024  
Number of Days to Update: 76

Source: San Diego Border Field Office  
Telephone: 760-339-2777  
Last EDR Contact: 04/12/2024  
Next Scheduled EDR Contact: 07/29/2024  
Data Release Frequency: Varies

### INYO COUNTY:

#### CUPA INYO: CUPA Facility List Cupa facility list.

Date of Government Version: 04/02/2018  
Date Data Arrived at EDR: 04/03/2018  
Date Made Active in Reports: 06/14/2018  
Number of Days to Update: 72

Source: Inyo County Environmental Health Services  
Telephone: 760-878-0238  
Last EDR Contact: 05/09/2024  
Next Scheduled EDR Contact: 08/26/2024  
Data Release Frequency: Varies

### KERN COUNTY:

#### CUPA KERN: CUPA Facility List

A listing of sites included in the Kern County Hazardous Material Business Plan.

Date of Government Version: 10/30/2023  
Date Data Arrived at EDR: 11/01/2023  
Date Made Active in Reports: 01/23/2024  
Number of Days to Update: 83

Source: Kern County Public Health  
Telephone: 661-321-3000  
Last EDR Contact: 04/25/2024  
Next Scheduled EDR Contact: 08/12/2024  
Data Release Frequency: Varies

#### UST KERN: Underground Storage Tank Sites & Tank Listing Kern County Sites and Tanks Listing.

Date of Government Version: 04/25/2024  
Date Data Arrived at EDR: 05/01/2024  
Date Made Active in Reports: 05/08/2024  
Number of Days to Update: 7

Source: Kern County Environment Health Services Department  
Telephone: 661-862-8700  
Last EDR Contact: 04/25/2024  
Next Scheduled EDR Contact: 08/12/2024  
Data Release Frequency: Quarterly

### KINGS COUNTY:

#### CUPA KINGS: CUPA Facility List

A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 12/03/2020  
Date Data Arrived at EDR: 01/26/2021  
Date Made Active in Reports: 04/14/2021  
Number of Days to Update: 78

Source: Kings County Department of Public Health  
Telephone: 559-584-1411  
Last EDR Contact: 05/09/2024  
Next Scheduled EDR Contact: 08/26/2024  
Data Release Frequency: Varies

### LAKE COUNTY:

#### CUPA LAKE: CUPA Facility List Cupa facility list

Date of Government Version: 02/05/2024  
Date Data Arrived at EDR: 02/08/2024  
Date Made Active in Reports: 04/26/2024  
Number of Days to Update: 78

Source: Lake County Environmental Health  
Telephone: 707-263-1164  
Last EDR Contact: 04/08/2024  
Next Scheduled EDR Contact: 07/22/2024  
Data Release Frequency: Varies

### LASSEN COUNTY:

#### CUPA LASSEN: CUPA Facility List Cupa facility list

Date of Government Version: 07/31/2020  
Date Data Arrived at EDR: 08/21/2020  
Date Made Active in Reports: 11/09/2020  
Number of Days to Update: 80

Source: Lassen County Environmental Health  
Telephone: 530-251-8528  
Last EDR Contact: 04/12/2024  
Next Scheduled EDR Contact: 07/29/2024  
Data Release Frequency: Varies

### LOS ANGELES COUNTY:

#### AOCONCERN: Key Areas of Concerns in Los Angeles County

San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office. Date of Government Version: 3/30/2009 Exide Site area is a cleanup plan of lead-impacted soil surrounding the former Exide Facility as designated by the DTSC. Date of Government Version: 7/17/2017

Date of Government Version: 03/30/2009  
Date Data Arrived at EDR: 03/31/2009  
Date Made Active in Reports: 10/23/2009  
Number of Days to Update: 206

Source: N/A  
Telephone: N/A  
Last EDR Contact: 03/08/2024  
Next Scheduled EDR Contact: 06/24/2024  
Data Release Frequency: No Update Planned

#### HMS LOS ANGELES: HMS: Street Number List

Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 01/16/2024  
Date Data Arrived at EDR: 01/18/2024  
Date Made Active in Reports: 03/26/2024  
Number of Days to Update: 68

Source: Department of Public Works  
Telephone: 626-458-3517  
Last EDR Contact: 04/12/2024  
Next Scheduled EDR Contact: 07/15/2024  
Data Release Frequency: Semi-Annually

#### LF LOS ANGELES: List of Solid Waste Facilities

Solid Waste Facilities in Los Angeles County.

Date of Government Version: 01/09/2024  
Date Data Arrived at EDR: 01/10/2024  
Date Made Active in Reports: 03/27/2024  
Number of Days to Update: 77

Source: La County Department of Public Works  
Telephone: 818-458-5185  
Last EDR Contact: 04/09/2024  
Next Scheduled EDR Contact: 07/22/2024  
Data Release Frequency: Varies

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### LF LOS ANGELES CITY: City of Los Angeles Landfills

Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 12/31/2022  
Date Data Arrived at EDR: 01/12/2023  
Date Made Active in Reports: 03/29/2023  
Number of Days to Update: 76

Source: Engineering & Construction Division  
Telephone: 213-473-7869  
Last EDR Contact: 04/05/2024  
Next Scheduled EDR Contact: 07/22/2024  
Data Release Frequency: Varies

### LOS ANGELES AST: Active & Inactive AST Inventory

A listing of active & inactive above ground petroleum storage tank site locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019  
Date Data Arrived at EDR: 06/25/2019  
Date Made Active in Reports: 08/22/2019  
Number of Days to Update: 58

Source: Los Angeles Fire Department  
Telephone: 213-978-3800  
Last EDR Contact: 03/19/2024  
Next Scheduled EDR Contact: 07/01/2024  
Data Release Frequency: Varies

### LOS ANGELES CO LF METHANE: Methane Producing Landfills

This data was created on April 30, 2012 to represent known disposal sites in Los Angeles County that may produce and emanate methane gas. The shapefile contains disposal sites within Los Angeles County that once accepted degradable refuse material. Information used to create this data was extracted from a landfill survey performed by County Engineers (Major Waste System Map, 1973) as well as historical records from CalRecycle, Regional Water Quality Control Board, and Los Angeles County Department of Public Health

Date of Government Version: 04/13/2023  
Date Data Arrived at EDR: 07/13/2023  
Date Made Active in Reports: 09/27/2023  
Number of Days to Update: 76

Source: Los Angeles County Department of Public Works  
Telephone: 626-458-6973  
Last EDR Contact: 04/11/2024  
Next Scheduled EDR Contact: 07/22/2024  
Data Release Frequency: No Update Planned

### LOS ANGELES HM: Active & Inactive Hazardous Materials Inventory

A listing of active & inactive hazardous materials facility locations, located in the City of Los Angeles.

Date of Government Version: 12/01/2023  
Date Data Arrived at EDR: 12/13/2023  
Date Made Active in Reports: 12/14/2023  
Number of Days to Update: 1

Source: Los Angeles Fire Department  
Telephone: 213-978-3800  
Last EDR Contact: 03/19/2024  
Next Scheduled EDR Contact: 07/01/2024  
Data Release Frequency: Varies

### LOS ANGELES UST: Active & Inactive UST Inventory

A listing of active & inactive underground storage tank site locations and underground storage tank historical sites, located in the City of Los Angeles.

Date of Government Version: 12/01/2023  
Date Data Arrived at EDR: 12/13/2023  
Date Made Active in Reports: 03/07/2024  
Number of Days to Update: 85

Source: Los Angeles Fire Department  
Telephone: 213-978-3800  
Last EDR Contact: 03/19/2024  
Next Scheduled EDR Contact: 07/01/2024  
Data Release Frequency: Varies

### SITE MIT LOS ANGELES: Site Mitigation LA County List

Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 07/11/2023  
Date Data Arrived at EDR: 10/17/2023  
Date Made Active in Reports: 01/09/2024  
Number of Days to Update: 84

Source: Community Health Services  
Telephone: 323-890-7806  
Last EDR Contact: 04/18/2024  
Next Scheduled EDR Contact: 07/29/2024  
Data Release Frequency: Annually

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UST EL SEGUNDO: City of El Segundo Underground Storage Tank  
Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017  
Date Data Arrived at EDR: 04/19/2017  
Date Made Active in Reports: 05/10/2017  
Number of Days to Update: 21

Source: City of El Segundo Fire Department  
Telephone: 310-524-2236  
Last EDR Contact: 04/05/2024  
Next Scheduled EDR Contact: 07/22/2024  
Data Release Frequency: No Update Planned

UST LONG BEACH: City of Long Beach Underground Storage Tank  
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 04/22/2019  
Date Data Arrived at EDR: 04/23/2019  
Date Made Active in Reports: 06/27/2019  
Number of Days to Update: 65

Source: City of Long Beach Fire Department  
Telephone: 562-570-2563  
Last EDR Contact: 04/12/2024  
Next Scheduled EDR Contact: 07/29/2024  
Data Release Frequency: Varies

UST TORRANCE: City of Torrance Underground Storage Tank  
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 04/12/2023  
Date Data Arrived at EDR: 05/02/2023  
Date Made Active in Reports: 06/13/2023  
Number of Days to Update: 42

Source: City of Torrance Fire Department  
Telephone: 310-618-2973  
Last EDR Contact: 04/12/2024  
Next Scheduled EDR Contact: 07/29/2024  
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA MADERA: CUPA Facility List

A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 08/10/2020  
Date Data Arrived at EDR: 08/12/2020  
Date Made Active in Reports: 10/23/2020  
Number of Days to Update: 72

Source: Madera County Environmental Health  
Telephone: 559-675-7823  
Last EDR Contact: 05/09/2024  
Next Scheduled EDR Contact: 08/26/2024  
Data Release Frequency: Varies

MARIN COUNTY:

UST MARIN: Underground Storage Tank Sites  
Currently permitted USTs in Marin County.

Date of Government Version: 09/26/2018  
Date Data Arrived at EDR: 10/04/2018  
Date Made Active in Reports: 11/02/2018  
Number of Days to Update: 29

Source: Public Works Department Waste Management  
Telephone: 415-473-6647  
Last EDR Contact: 03/22/2024  
Next Scheduled EDR Contact: 07/08/2024  
Data Release Frequency: Semi-Annually

MENDOCINO COUNTY:

UST MENDOCINO: Mendocino County UST Database  
A listing of underground storage tank locations in Mendocino County.



## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 09/22/2021  
Date Data Arrived at EDR: 11/18/2021  
Date Made Active in Reports: 11/22/2021  
Number of Days to Update: 4

Source: Department of Public Health  
Telephone: 707-463-4466  
Last EDR Contact: 05/17/2024  
Next Scheduled EDR Contact: 09/02/2024  
Data Release Frequency: Annually

### MERCED COUNTY:

CUPA MERCED: CUPA Facility List  
CUPA facility list.

Date of Government Version: 11/15/2023  
Date Data Arrived at EDR: 11/20/2023  
Date Made Active in Reports: 02/15/2024  
Number of Days to Update: 87

Source: Merced County Environmental Health  
Telephone: 209-381-1094  
Last EDR Contact: 05/08/2024  
Next Scheduled EDR Contact: 08/26/2024  
Data Release Frequency: Varies

### MONO COUNTY:

CUPA MONO: CUPA Facility List  
CUPA Facility List

Date of Government Version: 02/22/2021  
Date Data Arrived at EDR: 03/02/2021  
Date Made Active in Reports: 05/19/2021  
Number of Days to Update: 78

Source: Mono County Health Department  
Telephone: 760-932-5580  
Last EDR Contact: 05/17/2024  
Next Scheduled EDR Contact: 09/02/2024  
Data Release Frequency: Varies

### MONTEREY COUNTY:

CUPA MONTEREY: CUPA Facility Listing  
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 10/04/2021  
Date Data Arrived at EDR: 10/06/2021  
Date Made Active in Reports: 12/29/2021  
Number of Days to Update: 84

Source: Monterey County Health Department  
Telephone: 831-796-1297  
Last EDR Contact: 03/22/2024  
Next Scheduled EDR Contact: 07/08/2024  
Data Release Frequency: Varies

### NAPA COUNTY:

LUST NAPA: Sites With Reported Contamination  
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017  
Date Data Arrived at EDR: 01/11/2017  
Date Made Active in Reports: 03/02/2017  
Number of Days to Update: 50

Source: Napa County Department of Environmental Management  
Telephone: 707-253-4269  
Last EDR Contact: 05/17/2024  
Next Scheduled EDR Contact: 09/02/2024  
Data Release Frequency: No Update Planned

UST NAPA: Closed and Operating Underground Storage Tank Sites  
Underground storage tank sites located in Napa county.

Date of Government Version: 09/05/2019  
Date Data Arrived at EDR: 09/09/2019  
Date Made Active in Reports: 10/31/2019  
Number of Days to Update: 52

Source: Napa County Department of Environmental Management  
Telephone: 707-253-4269  
Last EDR Contact: 05/17/2024  
Next Scheduled EDR Contact: 09/02/2024  
Data Release Frequency: No Update Planned

### NEVADA COUNTY:

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### CUPA NEVADA: CUPA Facility List CUPA facility list.

Date of Government Version: 10/31/2023  
Date Data Arrived at EDR: 11/03/2023  
Date Made Active in Reports: 01/23/2024  
Number of Days to Update: 81

Source: Community Development Agency  
Telephone: 530-265-1467  
Last EDR Contact: 04/16/2024  
Next Scheduled EDR Contact: 08/05/2024  
Data Release Frequency: Varies

### ORANGE COUNTY:

#### IND\_SITE ORANGE: List of Industrial Site Cleanups Orange County Petroleum and non-petroleum spills.

Date of Government Version: 02/02/2024  
Date Data Arrived at EDR: 03/13/2024  
Date Made Active in Reports: 06/04/2024  
Number of Days to Update: 83

Source: Health Care Agency  
Telephone: 714-834-3446  
Last EDR Contact: 05/02/2024  
Next Scheduled EDR Contact: 08/12/2024  
Data Release Frequency: Annually

#### LUST ORANGE: List of Underground Storage Tank Cleanups Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 02/22/2024  
Date Data Arrived at EDR: 03/13/2024  
Date Made Active in Reports: 06/04/2024  
Number of Days to Update: 83

Source: Health Care Agency  
Telephone: 714-834-3446  
Last EDR Contact: 05/02/2024  
Next Scheduled EDR Contact: 08/12/2024  
Data Release Frequency: Quarterly

#### UST ORANGE: List of Underground Storage Tank Facilities Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 02/22/2024  
Date Data Arrived at EDR: 03/13/2024  
Date Made Active in Reports: 06/04/2024  
Number of Days to Update: 83

Source: Health Care Agency  
Telephone: 714-834-3446  
Last EDR Contact: 05/02/2024  
Next Scheduled EDR Contact: 08/12/2024  
Data Release Frequency: Quarterly

### PLACER COUNTY:

#### MS PLACER: Master List of Facilities List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 02/28/2024  
Date Data Arrived at EDR: 02/28/2024  
Date Made Active in Reports: 05/16/2024  
Number of Days to Update: 78

Source: Placer County Health and Human Services  
Telephone: 530-745-2363  
Last EDR Contact: 05/22/2024  
Next Scheduled EDR Contact: 09/09/2024  
Data Release Frequency: Semi-Annually

### PLUMAS COUNTY:

#### CUPA PLUMAS: CUPA Facility List Plumas County CUPA Program facilities.

Date of Government Version: 03/31/2019  
Date Data Arrived at EDR: 04/23/2019  
Date Made Active in Reports: 06/26/2019  
Number of Days to Update: 64

Source: Plumas County Environmental Health  
Telephone: 530-283-6355  
Last EDR Contact: 04/12/2024  
Next Scheduled EDR Contact: 07/29/2024  
Data Release Frequency: Varies

### RIVERSIDE COUNTY:

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### LUST RIVERSIDE: Listing of Underground Tank Cleanup Sites

Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 01/04/2024

Date Data Arrived at EDR: 01/04/2024

Date Made Active in Reports: 03/29/2024

Number of Days to Update: 85

Source: Department of Environmental Health

Telephone: 951-358-5055

Last EDR Contact: 12/05/2023

Next Scheduled EDR Contact: 06/24/2024

Data Release Frequency: Quarterly

### UST RIVERSIDE: Underground Storage Tank Tank List

Underground storage tank sites located in Riverside county.

Date of Government Version: 01/04/2024

Date Data Arrived at EDR: 01/04/2024

Date Made Active in Reports: 03/21/2024

Number of Days to Update: 77

Source: Department of Environmental Health

Telephone: 951-358-5055

Last EDR Contact: 03/08/2024

Next Scheduled EDR Contact: 06/24/2024

Data Release Frequency: Quarterly

### SACRAMENTO COUNTY:

#### CS SACRAMENTO: Toxic Site Clean-Up List

List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 11/07/2022

Date Data Arrived at EDR: 12/21/2022

Date Made Active in Reports: 03/16/2023

Number of Days to Update: 85

Source: Sacramento County Environmental Management

Telephone: 916-875-8406

Last EDR Contact: 03/25/2024

Next Scheduled EDR Contact: 07/08/2024

Data Release Frequency: Quarterly

#### ML SACRAMENTO: Master Hazardous Materials Facility List

Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 11/07/2022

Date Data Arrived at EDR: 12/09/2022

Date Made Active in Reports: 03/01/2023

Number of Days to Update: 82

Source: Sacramento County Environmental Management

Telephone: 916-875-8406

Last EDR Contact: 03/25/2024

Next Scheduled EDR Contact: 07/08/2024

Data Release Frequency: Quarterly

### SAN BENITO COUNTY:

#### CUPA SAN BENITO: CUPA Facility List

Cupa facility list

Date of Government Version: 01/17/2024

Date Data Arrived at EDR: 01/18/2024

Date Made Active in Reports: 01/26/2024

Number of Days to Update: 8

Source: San Benito County Environmental Health

Telephone: N/A

Last EDR Contact: 05/09/2024

Next Scheduled EDR Contact: 08/12/2024

Data Release Frequency: Varies

### SAN BERNARDINO COUNTY:

#### PERMITS SAN BERNARDINO: Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 02/13/2024  
Date Data Arrived at EDR: 02/14/2024  
Date Made Active in Reports: 05/02/2024  
Number of Days to Update: 78

Source: San Bernardino County Fire Department Hazardous Materials Division  
Telephone: 909-387-3041  
Last EDR Contact: 04/25/2024  
Next Scheduled EDR Contact: 08/12/2024  
Data Release Frequency: Quarterly

### SAN DIEGO COUNTY:

#### HMMD SAN DIEGO: Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 05/16/2024  
Date Data Arrived at EDR: 05/22/2024  
Date Made Active in Reports: 05/24/2024  
Number of Days to Update: 2

Source: Hazardous Materials Management Division  
Telephone: 619-338-2268  
Last EDR Contact: 05/22/2024  
Next Scheduled EDR Contact: 09/09/2024  
Data Release Frequency: Quarterly

#### LF SAN DIEGO: Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 10/01/2023  
Date Data Arrived at EDR: 01/31/2024  
Date Made Active in Reports: 04/17/2024  
Number of Days to Update: 77

Source: Department of Health Services  
Telephone: 619-338-2209  
Last EDR Contact: 04/12/2024  
Next Scheduled EDR Contact: 07/29/2024  
Data Release Frequency: Varies

#### SAN DIEGO CO LOP: Local Oversight Program Listing

A listing of all LOP release sites that are or were under the County of San Diego's jurisdiction. Included are closed or transferred cases, open cases, and cases that did not have a case type indicated. The cases without a case type are mostly complaints; however, some of them could be LOP cases.

Date of Government Version: 07/22/2021  
Date Data Arrived at EDR: 10/19/2021  
Date Made Active in Reports: 01/13/2022  
Number of Days to Update: 86

Source: Department of Environmental Health  
Telephone: 858-505-6874  
Last EDR Contact: 04/12/2024  
Next Scheduled EDR Contact: 07/29/2024  
Data Release Frequency: Varies

#### SAN DIEGO CO SAM: Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010  
Date Data Arrived at EDR: 06/15/2010  
Date Made Active in Reports: 07/09/2010  
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health  
Telephone: 619-338-2371  
Last EDR Contact: 05/22/2024  
Next Scheduled EDR Contact: 09/09/2024  
Data Release Frequency: No Update Planned

### SAN FRANCISCO COUNTY:

#### CUPA SAN FRANCISCO CO: CUPA Facility Listing Cupa facilities

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 02/01/2024  
Date Data Arrived at EDR: 02/01/2024  
Date Made Active in Reports: 04/24/2024  
Number of Days to Update: 83

Source: San Francisco County Department of Environmental Health  
Telephone: 415-252-3896  
Last EDR Contact: 04/25/2024  
Next Scheduled EDR Contact: 08/12/2024  
Data Release Frequency: Varies

### LUST SAN FRANCISCO: Local Oversight Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008  
Date Data Arrived at EDR: 09/19/2008  
Date Made Active in Reports: 09/29/2008  
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County  
Telephone: 415-252-3920  
Last EDR Contact: 04/25/2024  
Next Scheduled EDR Contact: 08/12/2024  
Data Release Frequency: No Update Planned

### UST SAN FRANCISCO: Underground Storage Tank Information

Underground storage tank sites located in San Francisco county.

Date of Government Version: 02/01/2024  
Date Data Arrived at EDR: 02/01/2024  
Date Made Active in Reports: 04/24/2024  
Number of Days to Update: 83

Source: Department of Public Health  
Telephone: 415-252-3920  
Last EDR Contact: 04/25/2024  
Next Scheduled EDR Contact: 08/12/2024  
Data Release Frequency: Quarterly

### SAN FRANCISCO COUNTY:

#### SAN FRANCISCO MAHER: Maher Ordinance Property Listing

a listing of properties that fall within a Maher Ordinance, for all of San Francisco

Date of Government Version: 01/15/2024  
Date Data Arrived at EDR: 01/18/2024  
Date Made Active in Reports: 04/05/2024  
Number of Days to Update: 78

Source: San Francisco Planning  
Telephone: 628-652-7483  
Last EDR Contact: 04/16/2024  
Next Scheduled EDR Contact: 07/29/2024  
Data Release Frequency: Varies

### SAN JOAQUIN COUNTY:

#### UST SAN JOAQUIN: San Joaquin Co. UST

A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2018  
Date Data Arrived at EDR: 06/26/2018  
Date Made Active in Reports: 07/11/2018  
Number of Days to Update: 15

Source: Environmental Health Department  
Telephone: N/A  
Last EDR Contact: 03/08/2024  
Next Scheduled EDR Contact: 06/24/2024  
Data Release Frequency: Semi-Annually

### SAN LUIS OBISPO COUNTY:

#### CUPA SAN LUIS OBISPO: CUPA Facility List Cupa Facility List.

Date of Government Version: 02/14/2024  
Date Data Arrived at EDR: 02/14/2024  
Date Made Active in Reports: 05/02/2024  
Number of Days to Update: 78

Source: San Luis Obispo County Public Health Department  
Telephone: 805-781-5596  
Last EDR Contact: 05/09/2024  
Next Scheduled EDR Contact: 08/26/2024  
Data Release Frequency: Varies

### SAN MATEO COUNTY:

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### BI SAN MATEO: Business Inventory

List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 02/20/2020  
Date Data Arrived at EDR: 02/20/2020  
Date Made Active in Reports: 04/24/2020  
Number of Days to Update: 64

Source: San Mateo County Environmental Health Services Division  
Telephone: 650-363-1921  
Last EDR Contact: 03/07/2024  
Next Scheduled EDR Contact: 06/17/2024  
Data Release Frequency: Annually

### LUST SAN MATEO: Fuel Leak List

A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/29/2019  
Date Data Arrived at EDR: 03/29/2019  
Date Made Active in Reports: 05/29/2019  
Number of Days to Update: 61

Source: San Mateo County Environmental Health Services Division  
Telephone: 650-363-1921  
Last EDR Contact: 05/31/2024  
Next Scheduled EDR Contact: 09/16/2024  
Data Release Frequency: Semi-Annually

### SANTA BARBARA COUNTY:

#### CUPA SANTA BARBARA: CUPA Facility Listing

CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011  
Date Data Arrived at EDR: 09/09/2011  
Date Made Active in Reports: 10/07/2011  
Number of Days to Update: 28

Source: Santa Barbara County Public Health Department  
Telephone: 805-686-8167  
Last EDR Contact: 05/09/2024  
Next Scheduled EDR Contact: 08/26/2024  
Data Release Frequency: No Update Planned

### SANTA CLARA COUNTY:

#### CUPA SANTA CLARA: Cupa Facility List

Cupa facility list

Date of Government Version: 02/21/2024  
Date Data Arrived at EDR: 02/22/2024  
Date Made Active in Reports: 05/08/2024  
Number of Days to Update: 76

Source: Department of Environmental Health  
Telephone: 408-918-1973  
Last EDR Contact: 05/09/2024  
Next Scheduled EDR Contact: 08/26/2024  
Data Release Frequency: Varies

#### HIST LUST SANTA CLARA: HIST LUST - Fuel Leak Site Activity Report

A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005  
Date Data Arrived at EDR: 03/30/2005  
Date Made Active in Reports: 04/21/2005  
Number of Days to Update: 22

Source: Santa Clara Valley Water District  
Telephone: 408-265-2600  
Last EDR Contact: 03/23/2009  
Next Scheduled EDR Contact: 06/22/2009  
Data Release Frequency: No Update Planned

#### LUST SANTA CLARA: LOP Listing

A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014  
Date Data Arrived at EDR: 03/05/2014  
Date Made Active in Reports: 03/18/2014  
Number of Days to Update: 13

Source: Department of Environmental Health  
Telephone: 408-918-3417  
Last EDR Contact: 05/17/2024  
Next Scheduled EDR Contact: 09/02/2024  
Data Release Frequency: No Update Planned

### SANTA CRUZ COUNTY:

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### CUPA SANTA CRUZ: CUPA Facility List CUPA facility listing.

Date of Government Version: 01/21/2017  
Date Data Arrived at EDR: 02/22/2017  
Date Made Active in Reports: 05/23/2017  
Number of Days to Update: 90

Source: Santa Cruz County Environmental Health  
Telephone: 831-464-2761  
Last EDR Contact: 05/09/2024  
Next Scheduled EDR Contact: 08/26/2024  
Data Release Frequency: Varies

### SITE MIT SANTA CRUZ: Site Mitigation Santa Cruz County List

Sites may become contaminated with toxic chemicals through illegal dumping or disposal, from leaking underground storage tanks, or through industrial or commercial activities. The goal of the site mitigation program is to protect the public health and the environment while facilitating completion of contaminated site clean-up projects in a timely manner.

Date of Government Version: 12/03/2018  
Date Data Arrived at EDR: 06/23/2023  
Date Made Active in Reports: 07/13/2023  
Number of Days to Update: 20

Source: Santa Cruz Environmental Health Services  
Telephone: 831-454-2761  
Last EDR Contact: 05/09/2024  
Next Scheduled EDR Contact: 08/26/2024  
Data Release Frequency: Varies

### SHASTA COUNTY:

#### CUPA SHASTA: CUPA Facility List Cupa Facility List.

Date of Government Version: 06/15/2017  
Date Data Arrived at EDR: 06/19/2017  
Date Made Active in Reports: 08/09/2017  
Number of Days to Update: 51

Source: Shasta County Department of Resource Management  
Telephone: 530-225-5789  
Last EDR Contact: 05/09/2024  
Next Scheduled EDR Contact: 08/26/2024  
Data Release Frequency: Varies

### SOLANO COUNTY:

#### LUST SOLANO: Leaking Underground Storage Tanks

A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/04/2019  
Date Data Arrived at EDR: 06/06/2019  
Date Made Active in Reports: 08/13/2019  
Number of Days to Update: 68

Source: Solano County Department of Environmental Management  
Telephone: 707-784-6770  
Last EDR Contact: 05/22/2024  
Next Scheduled EDR Contact: 09/09/2024  
Data Release Frequency: Quarterly

#### UST SOLANO: Underground Storage Tanks

Underground storage tank sites located in Solano county.

Date of Government Version: 09/15/2021  
Date Data Arrived at EDR: 09/16/2021  
Date Made Active in Reports: 12/09/2021  
Number of Days to Update: 84

Source: Solano County Department of Environmental Management  
Telephone: 707-784-6770  
Last EDR Contact: 05/22/2024  
Next Scheduled EDR Contact: 09/09/2024  
Data Release Frequency: Quarterly

### SONOMA COUNTY:

#### CUPA SONOMA: Cupa Facility List Cupa Facility list

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 07/02/2021  
Date Data Arrived at EDR: 07/06/2021  
Date Made Active in Reports: 07/14/2021  
Number of Days to Update: 8

Source: County of Sonoma Fire & Emergency Services Department  
Telephone: 707-565-1174  
Last EDR Contact: 03/15/2024  
Next Scheduled EDR Contact: 07/01/2024  
Data Release Frequency: Varies

### LUST SONOMA: Leaking Underground Storage Tank Sites

A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 06/30/2021  
Date Data Arrived at EDR: 06/30/2021  
Date Made Active in Reports: 09/24/2021  
Number of Days to Update: 86

Source: Department of Health Services  
Telephone: 707-565-6565  
Last EDR Contact: 03/15/2024  
Next Scheduled EDR Contact: 07/01/2024  
Data Release Frequency: Quarterly

### STANISLAUS COUNTY:

#### CUPA STANISLAUS: CUPA Facility List

Cupa facility list

Date of Government Version: 02/08/2022  
Date Data Arrived at EDR: 02/10/2022  
Date Made Active in Reports: 05/04/2022  
Number of Days to Update: 83

Source: Stanislaus County Department of Environmental Protection  
Telephone: 209-525-6751  
Last EDR Contact: 04/05/2024  
Next Scheduled EDR Contact: 07/22/2024  
Data Release Frequency: Varies

### SUTTER COUNTY:

#### UST SUTTER: Underground Storage Tanks

Underground storage tank sites located in Sutter county.

Date of Government Version: 08/03/2023  
Date Data Arrived at EDR: 08/24/2023  
Date Made Active in Reports: 09/12/2023  
Number of Days to Update: 19

Source: Sutter County Environmental Health Services  
Telephone: 530-822-7500  
Last EDR Contact: 05/22/2024  
Next Scheduled EDR Contact: 09/09/2024  
Data Release Frequency: Semi-Annually

### TEHAMA COUNTY:

#### CUPA TEHAMA: CUPA Facility List

Cupa facilities

Date of Government Version: 12/05/2023  
Date Data Arrived at EDR: 02/01/2024  
Date Made Active in Reports: 02/28/2024  
Number of Days to Update: 27

Source: Tehama County Department of Environmental Health  
Telephone: 530-527-8020  
Last EDR Contact: 05/09/2024  
Next Scheduled EDR Contact: 08/12/2024  
Data Release Frequency: Varies

### TRINITY COUNTY:

#### CUPA TRINITY: CUPA Facility List

Cupa facility list

Date of Government Version: 01/17/2024  
Date Data Arrived at EDR: 01/18/2024  
Date Made Active in Reports: 04/03/2024  
Number of Days to Update: 76

Source: Department of Toxic Substances Control  
Telephone: 760-352-0381  
Last EDR Contact: 04/12/2024  
Next Scheduled EDR Contact: 07/29/2024  
Data Release Frequency: Varies

### TULARE COUNTY:



## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### CUPA TULARE: CUPA Facility List Cupa program facilities

Date of Government Version: 10/07/2022  
Date Data Arrived at EDR: 10/07/2022  
Date Made Active in Reports: 12/21/2022  
Number of Days to Update: 75

Source: Tulare County Environmental Health Services Division  
Telephone: 559-624-7400  
Last EDR Contact: 04/25/2024  
Next Scheduled EDR Contact: 08/12/2024  
Data Release Frequency: Varies

### TUOLUMNE COUNTY:

#### CUPA TUOLUMNE: CUPA Facility List Cupa facility list

Date of Government Version: 04/23/2018  
Date Data Arrived at EDR: 04/25/2018  
Date Made Active in Reports: 06/25/2018  
Number of Days to Update: 61

Source: Divison of Environmental Health  
Telephone: 209-533-5633  
Last EDR Contact: 04/12/2024  
Next Scheduled EDR Contact: 07/29/2024  
Data Release Frequency: Varies

### VENTURA COUNTY:

#### BWT VENTURA: Business Plan, Hazardous Waste Producers, and Operating Underground Tanks

The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 12/26/2023  
Date Data Arrived at EDR: 01/24/2024  
Date Made Active in Reports: 04/08/2024  
Number of Days to Update: 75

Source: Ventura County Environmental Health Division  
Telephone: 805-654-2813  
Last EDR Contact: 04/15/2024  
Next Scheduled EDR Contact: 07/29/2024  
Data Release Frequency: Quarterly

#### LF VENTURA: Inventory of Illegal Abandoned and Inactive Sites

Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011  
Date Data Arrived at EDR: 12/01/2011  
Date Made Active in Reports: 01/19/2012  
Number of Days to Update: 49

Source: Environmental Health Division  
Telephone: 805-654-2813  
Last EDR Contact: 03/22/2024  
Next Scheduled EDR Contact: 07/08/2024  
Data Release Frequency: No Update Planned

#### LUST VENTURA: Listing of Underground Tank Cleanup Sites

Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008  
Date Data Arrived at EDR: 06/24/2008  
Date Made Active in Reports: 07/31/2008  
Number of Days to Update: 37

Source: Environmental Health Division  
Telephone: 805-654-2813  
Last EDR Contact: 05/02/2024  
Next Scheduled EDR Contact: 08/19/2024  
Data Release Frequency: No Update Planned

#### MED WASTE VENTURA: Medical Waste Program List

To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 12/26/2023  
Date Data Arrived at EDR: 01/23/2024  
Date Made Active in Reports: 04/09/2024  
Number of Days to Update: 77

Source: Ventura County Resource Management Agency  
Telephone: 805-654-2813  
Last EDR Contact: 04/15/2024  
Next Scheduled EDR Contact: 07/29/2024  
Data Release Frequency: Quarterly

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### UST VENTURA: Underground Tank Closed Sites List

Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 02/27/2024

Date Data Arrived at EDR: 03/05/2024

Date Made Active in Reports: 05/29/2024

Number of Days to Update: 85

Source: Environmental Health Division

Telephone: 805-654-2813

Last EDR Contact: 06/04/2024

Next Scheduled EDR Contact: 09/16/2024

Data Release Frequency: Quarterly

### YOLO COUNTY:

#### UST YOLO: Underground Storage Tank Comprehensive Facility Report

Underground storage tank sites located in Yolo county.

Date of Government Version: 12/18/2023

Date Data Arrived at EDR: 12/26/2023

Date Made Active in Reports: 03/19/2024

Number of Days to Update: 84

Source: Yolo County Department of Health

Telephone: 530-666-8646

Last EDR Contact: 03/22/2024

Next Scheduled EDR Contact: 07/08/2024

Data Release Frequency: Annually

### YUBA COUNTY:

#### CUPA YUBA: CUPA Facility List

CUPA facility listing for Yuba County.

Date of Government Version: 01/22/2024

Date Data Arrived at EDR: 01/23/2024

Date Made Active in Reports: 04/08/2024

Number of Days to Update: 76

Source: Yuba County Environmental Health Department

Telephone: 530-749-7523

Last EDR Contact: 04/19/2024

Next Scheduled EDR Contact: 08/05/2024

Data Release Frequency: Varies

### OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

#### CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 02/05/2024

Date Data Arrived at EDR: 02/06/2024

Date Made Active in Reports: 04/25/2024

Number of Days to Update: 79

Source: Department of Energy & Environmental Protection

Telephone: 860-424-3375

Last EDR Contact: 05/07/2024

Next Scheduled EDR Contact: 08/19/2024

Data Release Frequency: No Update Planned

#### NJ MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2018

Date Data Arrived at EDR: 04/10/2019

Date Made Active in Reports: 05/16/2019

Number of Days to Update: 36

Source: Department of Environmental Protection

Telephone: N/A

Last EDR Contact: 03/29/2024

Next Scheduled EDR Contact: 07/15/2024

Data Release Frequency: Annually

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### NY MANIFEST: Facility and Manifest Data

Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 12/31/2019  
Date Data Arrived at EDR: 11/30/2023  
Date Made Active in Reports: 12/01/2023  
Number of Days to Update: 1

Source: Department of Environmental Conservation  
Telephone: 518-402-8651  
Last EDR Contact: 04/25/2024  
Next Scheduled EDR Contact: 08/05/2024  
Data Release Frequency: Quarterly

### PA MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 06/30/2018  
Date Data Arrived at EDR: 07/19/2019  
Date Made Active in Reports: 09/10/2019  
Number of Days to Update: 53

Source: Department of Environmental Protection  
Telephone: 717-783-8990  
Last EDR Contact: 04/08/2024  
Next Scheduled EDR Contact: 07/22/2024  
Data Release Frequency: Annually

### RI MANIFEST: Manifest information

Hazardous waste manifest information

Date of Government Version: 12/31/2020  
Date Data Arrived at EDR: 11/30/2021  
Date Made Active in Reports: 02/18/2022  
Number of Days to Update: 80

Source: Department of Environmental Management  
Telephone: 401-222-2797  
Last EDR Contact: 05/13/2024  
Next Scheduled EDR Contact: 08/26/2024  
Data Release Frequency: Annually

### WI MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 05/31/2018  
Date Data Arrived at EDR: 06/19/2019  
Date Made Active in Reports: 09/03/2019  
Number of Days to Update: 76

Source: Department of Natural Resources  
Telephone: N/A  
Last EDR Contact: 06/03/2024  
Next Scheduled EDR Contact: 09/16/2024  
Data Release Frequency: Annually

### Oil/Gas Pipelines

Source: Endeavor Business Media

Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

### Electric Power Transmission Line Data

Source: Endeavor Business Media

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**Sensitive Receptors:** There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

### AHA Hospitals:

Source: American Hospital Association, Inc.

Telephone: 312-280-5991

The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

### Medical Centers: Provider of Services Listing

Source: Centers for Medicare & Medicaid Services

Telephone: 410-786-3000

A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

### Nursing Homes

Source: National Institutes of Health

Telephone: 301-594-6248

Information on Medicare and Medicaid certified nursing homes in the United States.

### Public Schools

Source: National Center for Education Statistics

Telephone: 202-502-7300

The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

### Private Schools

Source: National Center for Education Statistics

Telephone: 202-502-7300

The National Center for Education Statistics' primary database on private school locations in the United States.

### Daycare Centers: Licensed Facilities

Source: Department of Social Services

Telephone: 916-657-4041

**Flood Zone Data:** This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.

Source: FEMA

Telephone: 877-336-2627

Date of Government Version: 2003, 2015

**NWI:** National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005, 2010 and 2015 from the U.S. Fish and Wildlife Service.

### State Wetlands Data: Wetland Inventory

Source: Department of Fish and Wildlife

Telephone: 916-445-0411

### Current USGS 7.5 Minute Topographic Map

Source: U.S. Geological Survey

## **STREET AND ADDRESS INFORMATION**

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## **GEOCHECK<sup>®</sup> - PHYSICAL SETTING SOURCE ADDENDUM**

### **TARGET PROPERTY ADDRESS**

VTTM 943  
HANFORD ARMONA ROAD  
HANFORD, CA 93230

### **TARGET PROPERTY COORDINATES**

|                                |                              |
|--------------------------------|------------------------------|
| Latitude (North):              | 36.309918 - 36° 18' 35.70"   |
| Longitude (West):              | 119.680091 - 119° 40' 48.33" |
| Universal Transverse Mercator: | Zone 11                      |
| UTM X (Meters):                | 259366.2                     |
| UTM Y (Meters):                | 4021456.5                    |
| Elevation:                     | 243 ft. above sea level      |

### **USGS TOPOGRAPHIC MAP**

|                      |                      |
|----------------------|----------------------|
| Target Property Map: | 50005774 HANFORD, CA |
| Version Date:        | 2021                 |

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

## GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

### GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

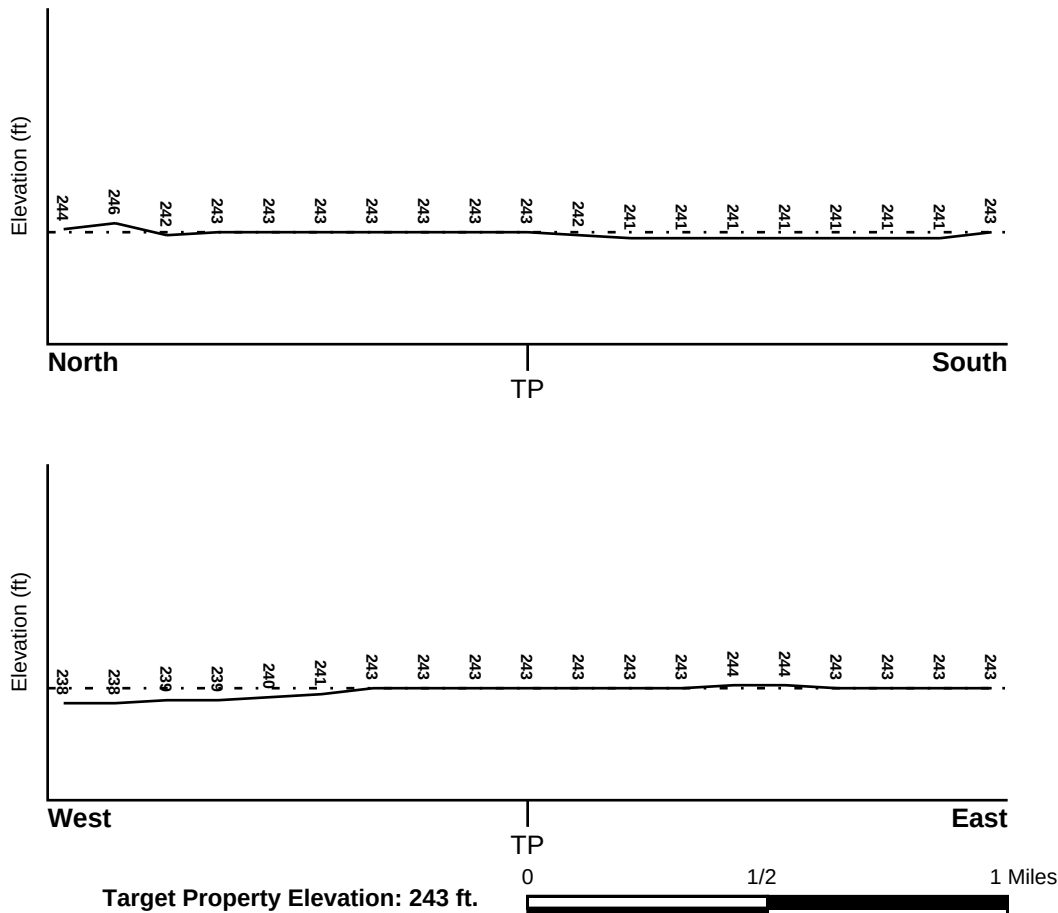
### TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

### TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General South

### SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

## GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

### HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

### FEMA FLOOD ZONE

| <u>Flood Plain Panel at Target Property</u> | <u>FEMA Source Type</u> |
|---------------------------------------------|-------------------------|
| 0600860075B                                 | FEMA Q3 Flood data      |
| <u>Additional Panels in search area:</u>    | <u>FEMA Source Type</u> |
| 06031C0185C                                 | FEMA FIRM Flood data    |
| 0600880005B                                 | FEMA Q3 Flood data      |

### NATIONAL WETLAND INVENTORY

| <u>NWI Quad at Target Property</u> | <u>NWI Electronic Data Coverage</u>            |
|------------------------------------|------------------------------------------------|
| HANFORD                            | YES - refer to the Overview Map and Detail Map |

### HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

#### *Site-Specific Hydrogeological Data\*:*

|                |            |
|----------------|------------|
| Search Radius: | 1.25 miles |
| Status:        | Not found  |

### AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

| <u>MAP ID</u> | <u>LOCATION FROM TP</u> | <u>GENERAL DIRECTION GROUNDWATER FLOW</u> |
|---------------|-------------------------|-------------------------------------------|
| Not Reported  |                         |                                           |

## **GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY**

### **GROUNDWATER FLOW VELOCITY INFORMATION**

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

### **GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY**

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

#### **ROCK STRATIGRAPHIC UNIT**

|         |                                           |
|---------|-------------------------------------------|
| Era:    | Cenozoic                                  |
| System: | Quaternary                                |
| Series: | Quaternary                                |
| Code:   | Q (decoded above as Era, System & Series) |

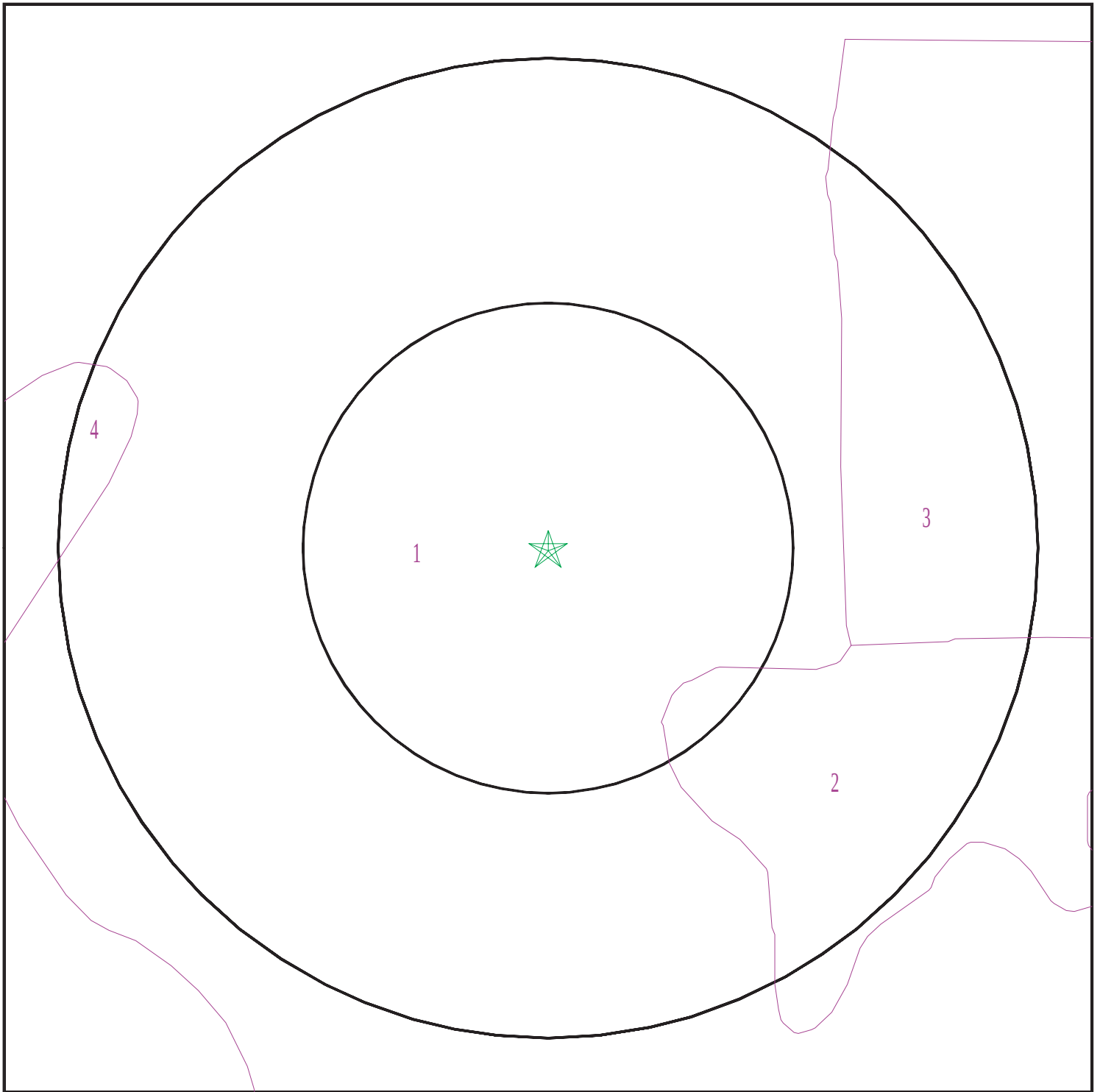
#### **GEOLOGIC AGE IDENTIFICATION**

Category: Stratified Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).



# SSURGO SOIL MAP - 7674781.2s



- ★ Target Property
- SSURGO Soil
- Water

0 1/16 1/8 1/4 Miles



SITE NAME: VTTM 943  
ADDRESS: Hanford Armona Road  
Hanford CA 93230  
LAT/LONG: 36.309918 / 119.680091

CLIENT: Geotek  
CONTACT: Kyle Richard Mchargue  
INQUIRY #: 7674781.2s  
DATE: June 06, 2024 6:58 pm

## GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

### DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

#### Soil Map ID: 1

Soil Component Name: NORD

Soil Surface Texture:  
Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

| Soil Layer Information |           |           |                    |                |              |                                              |                      |
|------------------------|-----------|-----------|--------------------|----------------|--------------|----------------------------------------------|----------------------|
| Layer                  | Boundary  |           | Soil Texture Class | Classification |              | Saturated hydraulic conductivity micro m/sec | Soil Reaction (pH)   |
|                        | Upper     | Lower     |                    | AASHTO Group   | Unified Soil |                                              |                      |
| 1                      | 0 inches  | 18 inches |                    | Not reported   | Not reported | Max: 14<br>Min: 4                            | Max: 8.4<br>Min: 7.4 |
| 2                      | 18 inches | 72 inches |                    | Not reported   | Not reported | Max: 14<br>Min: 4                            | Max: 8.4<br>Min: 7.4 |

#### Soil Map ID: 2

Soil Component Name: WASCO

Soil Surface Texture:  
Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

## GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

| Soil Layer Information |           |           |                    |                |              |                                                 |                      |
|------------------------|-----------|-----------|--------------------|----------------|--------------|-------------------------------------------------|----------------------|
| Layer                  | Boundary  |           | Soil Texture Class | Classification |              | Saturated hydraulic conductivity<br>micro m/sec | Soil Reaction (pH)   |
|                        | Upper     | Lower     |                    | AASHTO Group   | Unified Soil |                                                 |                      |
| 1                      | 0 inches  | 20 inches |                    | Not reported   | Not reported | Max: 42<br>Min: 14                              | Max: 8.4<br>Min: 6.6 |
| 2                      | 20 inches | 59 inches |                    | Not reported   | Not reported | Max: 42<br>Min: 14                              | Max: 8.4<br>Min: 6.6 |

### Soil Map ID: 3

Soil Component Name: URBAN LAND

Soil Surface Texture:

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class:

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

No Layer Information available.

### Soil Map ID: 4

Soil Component Name: CAJON

Soil Surface Texture:

Hydrologic Group: Class A - High infiltration rates. Soils are deep, well drained to excessively drained sands and gravels.

Soil Drainage Class:

Somewhat excessively drained

## GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

| Soil Layer Information |           |           |                    |                |              |                                                 |                      |
|------------------------|-----------|-----------|--------------------|----------------|--------------|-------------------------------------------------|----------------------|
| Layer                  | Boundary  |           | Soil Texture Class | Classification |              | Saturated hydraulic conductivity<br>micro m/sec | Soil Reaction (pH)   |
|                        | Upper     | Lower     |                    | AASHTO Group   | Unified Soil |                                                 |                      |
| 1                      | 0 inches  | 11 inches |                    | Not reported   | Not reported | Max: 141<br>Min: 42                             | Max: 8.4<br>Min: 7.4 |
| 2                      | 11 inches | 59 inches |                    | Not reported   | Not reported | Max: 141<br>Min: 42                             | Max: 8.4<br>Min: 7.4 |
| 3                      | 59 inches | 70 inches |                    | Not reported   | Not reported | Max: 141<br>Min: 42                             | Max: 8.4<br>Min: 7.4 |

### LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

### WELL SEARCH DISTANCE INFORMATION

| <u>DATABASE</u>  | <u>SEARCH DISTANCE (miles)</u> |
|------------------|--------------------------------|
| Federal USGS     | 1.000                          |
| Federal FRDS PWS | Nearest PWS within 1 mile      |
| State Database   | 1.000                          |

### FEDERAL USGS WELL INFORMATION

| <u>MAP ID</u> | <u>WELL ID</u>  | <u>LOCATION FROM TP</u> |
|---------------|-----------------|-------------------------|
| A3            | USGS40000171989 | 1/8 - 1/4 Mile North    |
| 6             | USGS40000171948 | 1/4 - 1/2 Mile West     |
| 7             | USGS40000172062 | 1/4 - 1/2 Mile North    |
| 8             | USGS40000171887 | 1/2 - 1 Mile SSW        |
| 19            | USGS40000171892 | 1/2 - 1 Mile SE         |
| 35            | USGS40000171955 | 1/2 - 1 Mile East       |
| 37            | USGS40000171990 | 1/2 - 1 Mile WNW        |
| D39           | USGS40000171934 | 1/2 - 1 Mile East       |
| 43            | USGS40000172122 | 1/2 - 1 Mile North      |

# GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

## FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

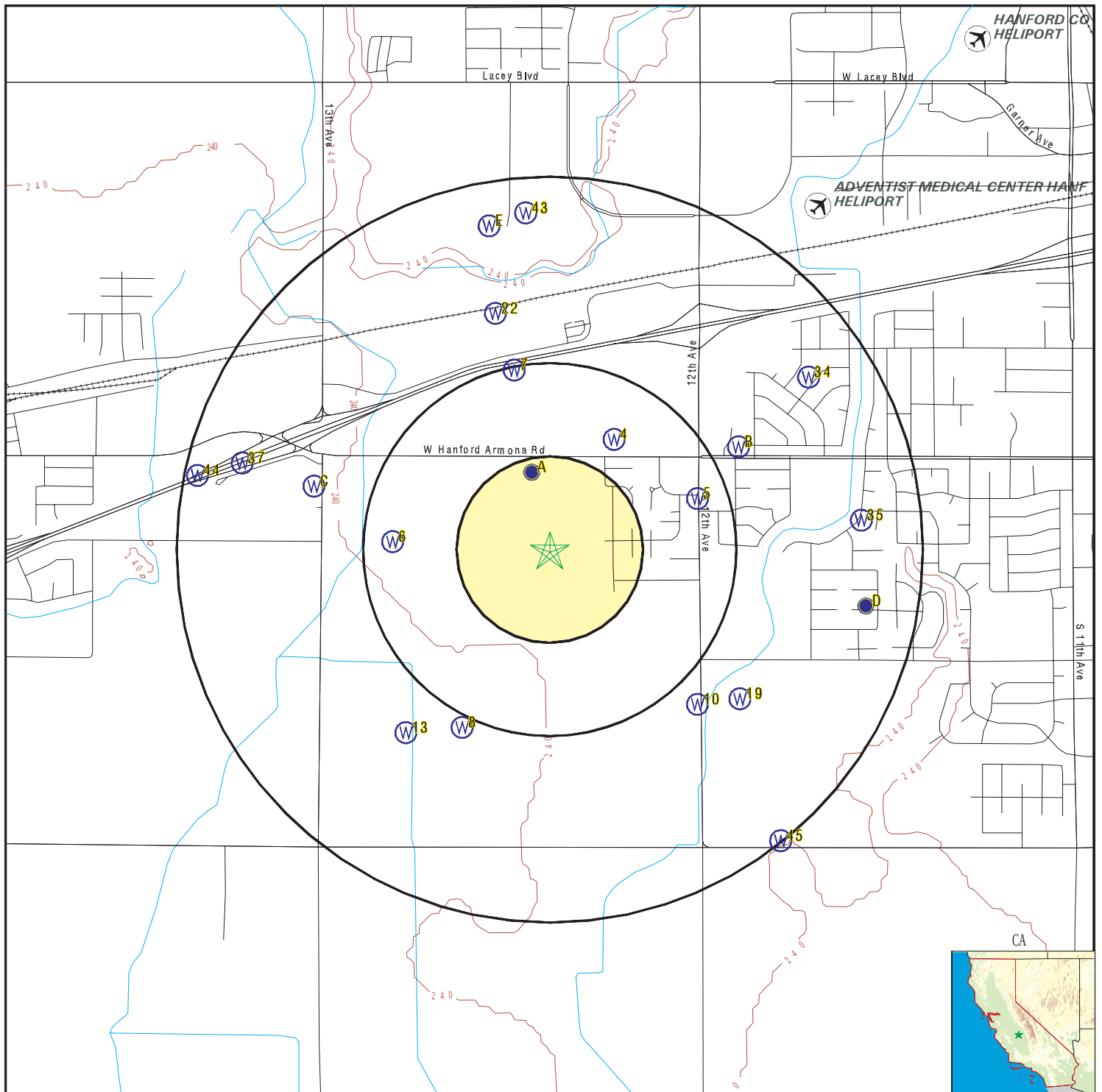
| MAP ID              | WELL ID | LOCATION<br>FROM TP |
|---------------------|---------|---------------------|
| No PWS System Found |         |                     |

Note: PWS System location is not always the same as well location.

## STATE DATABASE WELL INFORMATION

| MAP ID | WELL ID         | LOCATION<br>FROM TP |
|--------|-----------------|---------------------|
| A1     | CADWR0000009018 | 1/8 - 1/4 Mile NNW  |
| A2     | CADWR9000025224 | 1/8 - 1/4 Mile NNW  |
| 4      | CADWR9000025282 | 1/4 - 1/2 Mile NNE  |
| 5      | CADWR9000025217 | 1/4 - 1/2 Mile ENE  |
| B9     | 13788           | 1/2 - 1 Mile ENE    |
| 10     | CADWR9000025159 | 1/2 - 1 Mile SE     |
| B11    | CADDW2000019373 | 1/2 - 1 Mile ENE    |
| C12    | CAEDF0000140782 | 1/2 - 1 Mile WNW    |
| 13     | CADWR9000025153 | 1/2 - 1 Mile SW     |
| C14    | CAEDF0000070131 | 1/2 - 1 Mile WNW    |
| C15    | CAEDF0000081455 | 1/2 - 1 Mile WNW    |
| C16    | CAEDF0000089774 | 1/2 - 1 Mile WNW    |
| C17    | CAEDF0000010313 | 1/2 - 1 Mile WNW    |
| C18    | CAEDF0000137784 | 1/2 - 1 Mile WNW    |
| C20    | CAEDF0000092794 | 1/2 - 1 Mile WNW    |
| C21    | CAEDF0000077344 | 1/2 - 1 Mile WNW    |
| 22     | CADDW2000001369 | 1/2 - 1 Mile NNW    |
| C23    | CAEDF0000117453 | 1/2 - 1 Mile WNW    |
| C24    | CAEDF0000059614 | 1/2 - 1 Mile WNW    |
| C25    | CAEDF0000129047 | 1/2 - 1 Mile WNW    |
| C26    | CAEDF0000052207 | 1/2 - 1 Mile WNW    |
| C27    | CAEDF0000012045 | 1/2 - 1 Mile WNW    |
| C28    | CAEDF0000125986 | 1/2 - 1 Mile WNW    |
| C29    | CAEDF0000106121 | 1/2 - 1 Mile WNW    |
| C30    | CAEDF0000057602 | 1/2 - 1 Mile WNW    |
| C31    | CAEDF0000063692 | 1/2 - 1 Mile WNW    |
| C32    | CAEDF0000130330 | 1/2 - 1 Mile WNW    |
| C33    | CAEDF0000115365 | 1/2 - 1 Mile WNW    |
| 34     | 13789           | 1/2 - 1 Mile ENE    |
| D36    | CADWR9000025197 | 1/2 - 1 Mile East   |
| D38    | CADWR0000012706 | 1/2 - 1 Mile East   |
| D40    | CAUSGSN00008167 | 1/2 - 1 Mile East   |
| E41    | CADWR9000025342 | 1/2 - 1 Mile North  |
| E42    | CADWR0000003421 | 1/2 - 1 Mile North  |
| 44     | CADWR9000025225 | 1/2 - 1 Mile WNW    |
| 45     | CADWR9000025104 | 1/2 - 1 Mile SE     |

# PHYSICAL SETTING SOURCE MAP - 7674781.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Airports
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons

- Groundwater Flow Direction
- Indeterminate Groundwater Flow at Location
- Groundwater Flow Varies at Location
- Closest Hydrogeological Data
- Oil, gas or related wells

# GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID  
Direction  
Distance  
Elevation

Database      EDR ID Number

**A1**  
**NNW**  
**1/8 - 1/4 Mile**  
**Higher**

**CA WELLS      CADWR0000009018**

|                           |                                                                                                                                                                                                                                                                                                                                                                       |                    |              |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|
| Well ID:                  | 19S21E03B001M                                                                                                                                                                                                                                                                                                                                                         | Well Type:         | UNK          |
| Source:                   | Department of Water Resources                                                                                                                                                                                                                                                                                                                                         |                    |              |
| Other Name:               | 19S21E03B001M                                                                                                                                                                                                                                                                                                                                                         | GAMA PFAS Testing: | Not Reported |
| Groundwater Quality Data: | <a href="https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&amp;samp_date=&amp;global_id=&amp;assigned_name=19S21E03B001M&amp;store_num=">https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&amp;samp_date=&amp;global_id=&amp;assigned_name=19S21E03B001M&amp;store_num=</a> |                    |              |
| GeoTracker Data:          | Not Reported                                                                                                                                                                                                                                                                                                                                                          |                    |              |

**A2**  
**NNW**  
**1/8 - 1/4 Mile**  
**Higher**

**CA WELLS      CADWR9000025224**

|               |               |                        |              |
|---------------|---------------|------------------------|--------------|
| State Well #: | 19S21E03B001M | Station ID:            | 17245        |
| Well Name:    | 19S21E03B001M | Basin Name:            | Tulare Lake  |
| Well Use:     | Unknown       | Well Type:             | Single Well  |
| Well Depth:   | 0             | Well Completion Rpt #: | Not Reported |

**A3**  
**North**  
**1/8 - 1/4 Mile**  
**Higher**

**FED USGS      USGS40000171989**

|                        |                                      |                             |              |
|------------------------|--------------------------------------|-----------------------------|--------------|
| Organization ID:       | USGS-CA                              |                             |              |
| Organization Name:     | USGS California Water Science Center |                             |              |
| Monitor Location:      | 019S021E03B001M                      | Type:                       | Well         |
| Description:           | Not Reported                         | HUC:                        | 18030012     |
| Drainage Area:         | Not Reported                         | Drainage Area Units:        | Not Reported |
| Contrib Drainage Area: | Not Reported                         | Contrib Drainage Area Unts: | Not Reported |
| Aquifer:               | Central Valley aquifer system        |                             |              |
| Formation Type:        | Not Reported                         | Aquifer Type:               | Not Reported |
| Construction Date:     | 19510101                             | Well Depth:                 | 348          |
| Well Depth Units:      | ft                                   | Well Hole Depth:            | Not Reported |
| Well Hole Depth Units: | Not Reported                         |                             |              |

|                                             |              |                     |              |
|---------------------------------------------|--------------|---------------------|--------------|
| Ground water levels,Number of Measurements: | 1            | Level reading date: | 1961-11-21   |
| Feet below surface:                         | 83.00        | Feet to sea level:  | Not Reported |
| Note:                                       | Not Reported |                     |              |

**4**  
**NNE**  
**1/4 - 1/2 Mile**  
**Higher**

**CA WELLS      CADWR9000025282**

|               |               |                        |              |
|---------------|---------------|------------------------|--------------|
| State Well #: | 18S21E34R001M | Station ID:            | 32310        |
| Well Name:    | Not Reported  | Basin Name:            | Tulare Lake  |
| Well Use:     | Unknown       | Well Type:             | Unknown      |
| Well Depth:   | 0             | Well Completion Rpt #: | Not Reported |

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID  
Direction  
Distance  
Elevation

Database EDR ID Number

**5**

**ENE**  
**1/4 - 1/2 Mile**  
**Higher**

**CA WELLS CADWR9000025217**

|               |               |                        |              |
|---------------|---------------|------------------------|--------------|
| State Well #: | 13S21E15P001M | Station ID:            | 14115        |
| Well Name:    | Not Reported  | Basin Name:            | Tulare Lake  |
| Well Use:     | Unknown       | Well Type:             | Unknown      |
| Well Depth:   | 0             | Well Completion Rpt #: | Not Reported |

**6**

**West**  
**1/4 - 1/2 Mile**  
**Lower**

**FED USGS USGS40000171948**

|                        |                                      |                              |              |
|------------------------|--------------------------------------|------------------------------|--------------|
| Organization ID:       | USGS-CA                              | Type:                        | Well         |
| Organization Name:     | USGS California Water Science Center | HUC:                         | 18030012     |
| Monitor Location:      | 019S021E03D001M                      | Drainage Area Units:         | Not Reported |
| Description:           | Not Reported                         | Contrib Drainage Area Units: | Not Reported |
| Drainage Area:         | Not Reported                         |                              |              |
| Contrib Drainage Area: | Not Reported                         |                              |              |
| Aquifer:               | Central Valley aquifer system        |                              |              |
| Formation Type:        | Not Reported                         | Aquifer Type:                | Not Reported |
| Construction Date:     | 19590101                             | Well Depth:                  | 38           |
| Well Depth Units:      | ft                                   | Well Hole Depth:             | Not Reported |
| Well Hole Depth Units: | Not Reported                         |                              |              |

|                                              |              |                     |              |
|----------------------------------------------|--------------|---------------------|--------------|
| Ground water levels, Number of Measurements: | 1            | Level reading date: | 1961-12-12   |
| Feet below surface:                          | 21.40        | Feet to sea level:  | Not Reported |
| Note:                                        | Not Reported |                     |              |

**7**

**North**  
**1/4 - 1/2 Mile**  
**Higher**

**FED USGS USGS40000172062**

|                        |                                      |                              |              |
|------------------------|--------------------------------------|------------------------------|--------------|
| Organization ID:       | USGS-CA                              | Type:                        | Well         |
| Organization Name:     | USGS California Water Science Center | HUC:                         | 18030012     |
| Monitor Location:      | 018S021E34P001M                      | Drainage Area Units:         | Not Reported |
| Description:           | Not Reported                         | Contrib Drainage Area Units: | Not Reported |
| Drainage Area:         | Not Reported                         |                              |              |
| Contrib Drainage Area: | Not Reported                         |                              |              |
| Aquifer:               | Central Valley aquifer system        |                              |              |
| Formation Type:        | Not Reported                         | Aquifer Type:                | Not Reported |
| Construction Date:     | 19570101                             | Well Depth:                  | 335          |
| Well Depth Units:      | ft                                   | Well Hole Depth:             | Not Reported |
| Well Hole Depth Units: | Not Reported                         |                              |              |



# GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID  
Direction  
Distance  
Elevation

Database EDR ID Number

**8**  
**SSW**  
**1/2 - 1 Mile**  
**Lower**

**FED USGS USGS40000171887**

|                        |                                      |                              |              |
|------------------------|--------------------------------------|------------------------------|--------------|
| Organization ID:       | USGS-CA                              | Type:                        | Well         |
| Organization Name:     | USGS California Water Science Center | HUC:                         | 18030012     |
| Monitor Location:      | 019S021E03M001M                      | Drainage Area Units:         | Not Reported |
| Description:           | Not Reported                         | Contrib Drainage Area Units: | Not Reported |
| Drainage Area:         | Not Reported                         |                              |              |
| Contrib Drainage Area: | Not Reported                         |                              |              |
| Aquifer:               | Central Valley aquifer system        |                              |              |
| Formation Type:        | Not Reported                         | Aquifer Type:                | Not Reported |
| Construction Date:     | 19570101                             | Well Depth:                  | 280          |
| Well Depth Units:      | ft                                   | Well Hole Depth:             | Not Reported |
| Well Hole Depth Units: | Not Reported                         |                              |              |

|                                              |              |                     |              |
|----------------------------------------------|--------------|---------------------|--------------|
| Ground water levels, Number of Measurements: | 1            | Level reading date: | 1961-11-21   |
| Feet below surface:                          | 94.00        | Feet to sea level:  | Not Reported |
| Note:                                        | Not Reported |                     |              |

**B9**  
**ENE**  
**1/2 - 1 Mile**  
**Higher**

**CA WELLS 13788**

|             |              |             |                       |
|-------------|--------------|-------------|-----------------------|
| Seq:        | 13788        | Prim sta c: | 18S/21E-35N01 M       |
| Frds no:    | 1610003030   | County:     | 16                    |
| District:   | 12           | User id:    | CYA                   |
| System no:  | 1610003      | Water type: | G                     |
| Source nam: | WELL 37      | Station ty: | WELL/AMBNT/MUN/INTAKE |
| Latitude:   | 361851.0     | Longitude:  | 1194013.0             |
| Precision:  | 3            | Status:     | AR                    |
| Comment 1:  | Not Reported | Comment 2:  | Not Reported          |
| Comment 3:  | Not Reported | Comment 4:  | Not Reported          |
| Comment 5:  | Not Reported | Comment 6:  | Not Reported          |
| Comment 7:  | Not Reported |             |                       |

|             |              |             |                     |
|-------------|--------------|-------------|---------------------|
| System no:  | 1610003      | System nam: | Hanford, City Of    |
| Hqname:     | Not Reported | Address:    | 400 N. DOUTY STREET |
| City:       | HANFORD      | State:      | CA                  |
| Zip:        | 93230        | Zip ext:    | Not Reported        |
| Pop serv:   | 37000        | Connection: | 10813               |
| Area serve: | HANFORD      |             |                     |

**10**  
**SE**  
**1/2 - 1 Mile**  
**Higher**

**CA WELLS CADWR9000025159**

|               |               |                        |              |
|---------------|---------------|------------------------|--------------|
| State Well #: | 19S21E03J001M | Station ID:            | 35757        |
| Well Name:    | 19S21E03J001M | Basin Name:            | Tulare Lake  |
| Well Use:     | Unknown       | Well Type:             | Single Well  |
| Well Depth:   | 0             | Well Completion Rpt #: | Not Reported |

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID  
Direction  
Distance  
Elevation

Database EDR ID Number

**B11**  
**ENE**  
**1/2 - 1 Mile**  
**Higher**

**CA WELLS CADDW2000019373**

**GAMA:**

|                           |                                                                                                                                                                                                                                                                                                                                                                               |              |             |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-------------|
| Well ID:                  | CA1610003_030_030                                                                                                                                                                                                                                                                                                                                                             | Well Type:   | MUNICIPAL   |
| Source:                   | DDW                                                                                                                                                                                                                                                                                                                                                                           | Other Names: | 1610003-030 |
| GAMA Pfas testing:        | Not Reported                                                                                                                                                                                                                                                                                                                                                                  |              |             |
| Groundwater Quality Data: | <a href="https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DHS&amp;samp_date=&amp;global_id=&amp;assigned_name=CA1610003_030_030&amp;store_num=">https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DHS&amp;samp_date=&amp;global_id=&amp;assigned_name=CA1610003_030_030&amp;store_num=</a> |              |             |
| GeoTracker Data:          | Not Reported                                                                                                                                                                                                                                                                                                                                                                  |              |             |

**C12**  
**WNW**  
**1/2 - 1 Mile**  
**Lower**

**CA WELLS CAEDF0000140782**

|                           |                                                                                                                                                                                                                                                                                                                                                                             |             |            |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------|
| Well ID:                  | T0603100023-MW-19                                                                                                                                                                                                                                                                                                                                                           | Well Type:  | MONITORING |
| Source:                   | EDF                                                                                                                                                                                                                                                                                                                                                                         | Other Name: | MW-19      |
| GAMA PFAS Testing:        | Not Reported                                                                                                                                                                                                                                                                                                                                                                |             |            |
| Groundwater Quality Data: | <a href="https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&amp;samp_date=&amp;global_id=T0603100023&amp;assigned_name=MW-19&amp;store_num=">https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&amp;samp_date=&amp;global_id=T0603100023&amp;assigned_name=MW-19&amp;store_num=</a> |             |            |
| GeoTracker Data:          | <a href="https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&amp;global_id=T0603100023&amp;assigned_name=MW-19">https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&amp;global_id=T0603100023&amp;assigned_name=MW-19</a>                                                                                                       |             |            |

**13**  
**SW**  
**1/2 - 1 Mile**  
**Lower**

**CA WELLS CADWR9000025153**

|               |               |                        |              |
|---------------|---------------|------------------------|--------------|
| State Well #: | 19S21E03M001M | Station ID:            | 17246        |
| Well Name:    | 19S21E03M001M | Basin Name:            | Tulare Lake  |
| Well Use:     | Unknown       | Well Type:             | Single Well  |
| Well Depth:   | 0             | Well Completion Rpt #: | Not Reported |

**C14**  
**WNW**  
**1/2 - 1 Mile**  
**Lower**

**CA WELLS CAEDF0000070131**

|                           |                                                                                                                                                                                                                                                                                                                                                                             |             |            |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------|
| Well ID:                  | T0603100023-MW-13                                                                                                                                                                                                                                                                                                                                                           | Well Type:  | MONITORING |
| Source:                   | EDF                                                                                                                                                                                                                                                                                                                                                                         | Other Name: | MW-13      |
| GAMA PFAS Testing:        | Not Reported                                                                                                                                                                                                                                                                                                                                                                |             |            |
| Groundwater Quality Data: | <a href="https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&amp;samp_date=&amp;global_id=T0603100023&amp;assigned_name=MW-13&amp;store_num=">https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&amp;samp_date=&amp;global_id=T0603100023&amp;assigned_name=MW-13&amp;store_num=</a> |             |            |
| GeoTracker Data:          | <a href="https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&amp;global_id=T0603100023&amp;assigned_name=MW-13">https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&amp;global_id=T0603100023&amp;assigned_name=MW-13</a>                                                                                                       |             |            |

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID  
Direction  
Distance  
Elevation

Database EDR ID Number

**C15**  
**WNW**  
**1/2 - 1 Mile**  
**Lower**

**CA WELLS CAEDF0000081455**

Well ID: T0603100023-MW-2 Well Type: MONITORING  
Source: EDF Other Name: MW-2  
GAMA PFAS Testing: Not Reported  
Groundwater Quality Data: [https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&samp\\_date=&global\\_id=T0603100023&assigned\\_name=MW-2&store\\_num=](https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&samp_date=&global_id=T0603100023&assigned_name=MW-2&store_num=)  
GeoTracker Data: [https://geotracker.waterboards.ca.gov/profile\\_report.asp?cmd=MWEDFResults&global\\_id=T0603100023&assigned\\_name=MW-2](https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&global_id=T0603100023&assigned_name=MW-2)

**C16**  
**WNW**  
**1/2 - 1 Mile**  
**Lower**

**CA WELLS CAEDF0000089774**

Well ID: T0603100023-VEW-1 Well Type: MONITORING  
Source: EDF Other Name: VEW-1  
GAMA PFAS Testing: Not Reported  
Groundwater Quality Data: [https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&samp\\_date=&global\\_id=T0603100023&assigned\\_name=VEW-1&store\\_num=](https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&samp_date=&global_id=T0603100023&assigned_name=VEW-1&store_num=)  
GeoTracker Data: [https://geotracker.waterboards.ca.gov/profile\\_report.asp?cmd=MWEDFResults&global\\_id=T0603100023&assigned\\_name=VEW-1](https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&global_id=T0603100023&assigned_name=VEW-1)

**C17**  
**WNW**  
**1/2 - 1 Mile**  
**Lower**

**CA WELLS CAEDF0000010313**

Well ID: T0603100023-MW-15 Well Type: MONITORING  
Source: EDF Other Name: MW-15  
GAMA PFAS Testing: Not Reported  
Groundwater Quality Data: [https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&samp\\_date=&global\\_id=T0603100023&assigned\\_name=MW-15&store\\_num=](https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&samp_date=&global_id=T0603100023&assigned_name=MW-15&store_num=)  
GeoTracker Data: [https://geotracker.waterboards.ca.gov/profile\\_report.asp?cmd=MWEDFResults&global\\_id=T0603100023&assigned\\_name=MW-15](https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&global_id=T0603100023&assigned_name=MW-15)

**C18**  
**WNW**  
**1/2 - 1 Mile**  
**Lower**

**CA WELLS CAEDF00000137784**

Well ID: T0603100023-VEW-3 Well Type: MONITORING  
Source: EDF Other Name: VEW-3  
GAMA PFAS Testing: Not Reported  
Groundwater Quality Data: [https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&samp\\_date=&global\\_id=T0603100023&assigned\\_name=VEW-3&store\\_num=](https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&samp_date=&global_id=T0603100023&assigned_name=VEW-3&store_num=)  
GeoTracker Data: [https://geotracker.waterboards.ca.gov/profile\\_report.asp?cmd=MWEDFResults&global\\_id=T0603100023&assigned\\_name=VEW-3](https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&global_id=T0603100023&assigned_name=VEW-3)

# GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID  
Direction  
Distance  
Elevation

Database EDR ID Number

**19**  
**SE**  
**1/2 - 1 Mile**  
**Higher**

**FED USGS USGS40000171892**

|                        |                                      |                              |              |
|------------------------|--------------------------------------|------------------------------|--------------|
| Organization ID:       | USGS-CA                              | Type:                        | Well         |
| Organization Name:     | USGS California Water Science Center | HUC:                         | 18030012     |
| Monitor Location:      | 019S021E03J001M                      | Drainage Area Units:         | Not Reported |
| Description:           | Not Reported                         | Contrib Drainage Area Units: | Not Reported |
| Drainage Area:         | Not Reported                         |                              |              |
| Contrib Drainage Area: | Not Reported                         |                              |              |
| Aquifer:               | Central Valley aquifer system        |                              |              |
| Formation Type:        | Not Reported                         | Aquifer Type:                | Not Reported |
| Construction Date:     | 19590101                             | Well Depth:                  | 420          |
| Well Depth Units:      | ft                                   | Well Hole Depth:             | Not Reported |
| Well Hole Depth Units: | Not Reported                         |                              |              |

|                                              |              |                     |              |
|----------------------------------------------|--------------|---------------------|--------------|
| Ground water levels, Number of Measurements: | 1            | Level reading date: | 1961-11-21   |
| Feet below surface:                          | 80.50        | Feet to sea level:  | Not Reported |
| Note:                                        | Not Reported |                     |              |

**C20**  
**WNW**  
**1/2 - 1 Mile**  
**Lower**

**CA WELLS CAEDF0000092794**

|                           |                                                                                                                                                                                                                                                                                                                                                                           |             |            |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------|
| Well ID:                  | T0603100023-MW-9                                                                                                                                                                                                                                                                                                                                                          | Well Type:  | MONITORING |
| Source:                   | EDF                                                                                                                                                                                                                                                                                                                                                                       | Other Name: | MW-9       |
| GAMA PFAS Testing:        | Not Reported                                                                                                                                                                                                                                                                                                                                                              |             |            |
| Groundwater Quality Data: | <a href="https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&amp;samp_date=&amp;global_id=T0603100023&amp;assigned_name=MW-9&amp;store_num=">https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&amp;samp_date=&amp;global_id=T0603100023&amp;assigned_name=MW-9&amp;store_num=</a> |             |            |
| GeoTracker Data:          | <a href="https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&amp;global_id=T0603100023&amp;assigned_name=MW-9">https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&amp;global_id=T0603100023&amp;assigned_name=MW-9</a>                                                                                                       |             |            |

**C21**  
**WNW**  
**1/2 - 1 Mile**  
**Lower**

**CA WELLS CAEDF0000077344**

|                           |                                                                                                                                                                                                                                                                                                                                                                             |             |            |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------|
| Well ID:                  | T0603100023-MW-18                                                                                                                                                                                                                                                                                                                                                           | Well Type:  | MONITORING |
| Source:                   | EDF                                                                                                                                                                                                                                                                                                                                                                         | Other Name: | MW-18      |
| GAMA PFAS Testing:        | Not Reported                                                                                                                                                                                                                                                                                                                                                                |             |            |
| Groundwater Quality Data: | <a href="https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&amp;samp_date=&amp;global_id=T0603100023&amp;assigned_name=MW-18&amp;store_num=">https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&amp;samp_date=&amp;global_id=T0603100023&amp;assigned_name=MW-18&amp;store_num=</a> |             |            |
| GeoTracker Data:          | <a href="https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&amp;global_id=T0603100023&amp;assigned_name=MW-18">https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&amp;global_id=T0603100023&amp;assigned_name=MW-18</a>                                                                                                       |             |            |

**22**  
**NNW**  
**1/2 - 1 Mile**  
**Higher**

**CA WELLS CADDW2000001369**

**GAMA:**

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

|                           |                                                                                                                                                                                                                                                                                                                                                                               |              |             |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-------------|
| Well ID:                  | CA1600253_001_001                                                                                                                                                                                                                                                                                                                                                             | Well Type:   | MUNICIPAL   |
| Source:                   | DDW                                                                                                                                                                                                                                                                                                                                                                           | Other Names: | 1600253-001 |
| GAMA Pfas testing:        | Not Reported                                                                                                                                                                                                                                                                                                                                                                  |              |             |
| Groundwater Quality Data: | <a href="https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DHS&amp;samp_date=&amp;global_id=&amp;assigned_name=CA1600253_001_001&amp;store_num=">https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DHS&amp;samp_date=&amp;global_id=&amp;assigned_name=CA1600253_001_001&amp;store_num=</a> |              |             |
| GeoTracker Data:          | Not Reported                                                                                                                                                                                                                                                                                                                                                                  |              |             |

### C23 WNW 1/2 - 1 Mile Lower

CA WELLS CAEDF0000117453

|                           |                                                                                                                                                                                                                                                                                                                                                                           |             |            |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------|
| Well ID:                  | T0603100023-MW-8                                                                                                                                                                                                                                                                                                                                                          | Well Type:  | MONITORING |
| Source:                   | EDF                                                                                                                                                                                                                                                                                                                                                                       | Other Name: | MW-8       |
| GAMA PFAS Testing:        | Not Reported                                                                                                                                                                                                                                                                                                                                                              |             |            |
| Groundwater Quality Data: | <a href="https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&amp;samp_date=&amp;global_id=T0603100023&amp;assigned_name=MW-8&amp;store_num=">https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&amp;samp_date=&amp;global_id=T0603100023&amp;assigned_name=MW-8&amp;store_num=</a> |             |            |
| GeoTracker Data:          | <a href="https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&amp;global_id=T0603100023&amp;assigned_name=MW-8">https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&amp;global_id=T0603100023&amp;assigned_name=MW-8</a>                                                                                                       |             |            |

### C24 WNW 1/2 - 1 Mile Lower

CA WELLS CAEDF0000059614

|                           |                                                                                                                                                                                                                                                                                                                                                                           |             |            |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------|
| Well ID:                  | T0603100023-MW-4                                                                                                                                                                                                                                                                                                                                                          | Well Type:  | MONITORING |
| Source:                   | EDF                                                                                                                                                                                                                                                                                                                                                                       | Other Name: | MW-4       |
| GAMA PFAS Testing:        | Not Reported                                                                                                                                                                                                                                                                                                                                                              |             |            |
| Groundwater Quality Data: | <a href="https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&amp;samp_date=&amp;global_id=T0603100023&amp;assigned_name=MW-4&amp;store_num=">https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&amp;samp_date=&amp;global_id=T0603100023&amp;assigned_name=MW-4&amp;store_num=</a> |             |            |
| GeoTracker Data:          | <a href="https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&amp;global_id=T0603100023&amp;assigned_name=MW-4">https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&amp;global_id=T0603100023&amp;assigned_name=MW-4</a>                                                                                                       |             |            |

### C25 WNW 1/2 - 1 Mile Lower

CA WELLS CAEDF0000129047

|                           |                                                                                                                                                                                                                                                                                                                                                                             |             |            |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------|
| Well ID:                  | T0603100023-ASW-1                                                                                                                                                                                                                                                                                                                                                           | Well Type:  | MONITORING |
| Source:                   | EDF                                                                                                                                                                                                                                                                                                                                                                         | Other Name: | ASW-1      |
| GAMA PFAS Testing:        | Not Reported                                                                                                                                                                                                                                                                                                                                                                |             |            |
| Groundwater Quality Data: | <a href="https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&amp;samp_date=&amp;global_id=T0603100023&amp;assigned_name=ASW-1&amp;store_num=">https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&amp;samp_date=&amp;global_id=T0603100023&amp;assigned_name=ASW-1&amp;store_num=</a> |             |            |
| GeoTracker Data:          | <a href="https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&amp;global_id=T0603100023&amp;assigned_name=ASW-1">https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&amp;global_id=T0603100023&amp;assigned_name=ASW-1</a>                                                                                                       |             |            |

### C26 WNW 1/2 - 1 Mile Lower

CA WELLS CAEDF0000052207

|                           |                                                                                                                                                                                                                                                                                                                                                                             |             |            |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------|
| Well ID:                  | T0603100023-MW-17                                                                                                                                                                                                                                                                                                                                                           | Well Type:  | MONITORING |
| Source:                   | EDF                                                                                                                                                                                                                                                                                                                                                                         | Other Name: | MW-17      |
| GAMA PFAS Testing:        | Not Reported                                                                                                                                                                                                                                                                                                                                                                |             |            |
| Groundwater Quality Data: | <a href="https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&amp;samp_date=&amp;global_id=T0603100023&amp;assigned_name=MW-17&amp;store_num=">https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&amp;samp_date=&amp;global_id=T0603100023&amp;assigned_name=MW-17&amp;store_num=</a> |             |            |

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

GeoTracker Data: [https://geotracker.waterboards.ca.gov/profile\\_report.asp?cmd=MWEDFResults&global\\_id=T0603100023&assigned\\_name=MW-17](https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&global_id=T0603100023&assigned_name=MW-17)

**C27**  
**WNW**  
**1/2 - 1 Mile**  
**Lower**

**CA WELLS CAEDF0000012045**

Well ID: T0603100023-VEW-2 Well Type: MONITORING  
Source: EDF Other Name: VEW-2  
GAMA PFAS Testing: Not Reported  
Groundwater Quality Data: [https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&samp\\_date=&global\\_id=T0603100023&assigned\\_name=VEW-2&store\\_num=](https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&samp_date=&global_id=T0603100023&assigned_name=VEW-2&store_num=)  
GeoTracker Data: [https://geotracker.waterboards.ca.gov/profile\\_report.asp?cmd=MWEDFResults&global\\_id=T0603100023&assigned\\_name=VEW-2](https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&global_id=T0603100023&assigned_name=VEW-2)

**C28**  
**WNW**  
**1/2 - 1 Mile**  
**Lower**

**CA WELLS CAEDF00000125986**

Well ID: T0603100023-MW-3 Well Type: MONITORING  
Source: EDF Other Name: MW-3  
GAMA PFAS Testing: Not Reported  
Groundwater Quality Data: [https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&samp\\_date=&global\\_id=T0603100023&assigned\\_name=MW-3&store\\_num=](https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&samp_date=&global_id=T0603100023&assigned_name=MW-3&store_num=)  
GeoTracker Data: [https://geotracker.waterboards.ca.gov/profile\\_report.asp?cmd=MWEDFResults&global\\_id=T0603100023&assigned\\_name=MW-3](https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&global_id=T0603100023&assigned_name=MW-3)

**C29**  
**WNW**  
**1/2 - 1 Mile**  
**Lower**

**CA WELLS CAEDF00000106121**

Well ID: T0603100023-MW-16 Well Type: MONITORING  
Source: EDF Other Name: MW-16  
GAMA PFAS Testing: Not Reported  
Groundwater Quality Data: [https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&samp\\_date=&global\\_id=T0603100023&assigned\\_name=MW-16&store\\_num=](https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&samp_date=&global_id=T0603100023&assigned_name=MW-16&store_num=)  
GeoTracker Data: [https://geotracker.waterboards.ca.gov/profile\\_report.asp?cmd=MWEDFResults&global\\_id=T0603100023&assigned\\_name=MW-16](https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&global_id=T0603100023&assigned_name=MW-16)

**C30**  
**WNW**  
**1/2 - 1 Mile**  
**Lower**

**CA WELLS CAEDF0000057602**

Well ID: T0603100023-MW-14 Well Type: MONITORING  
Source: EDF Other Name: MW-14  
GAMA PFAS Testing: Not Reported  
Groundwater Quality Data: [https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&samp\\_date=&global\\_id=T0603100023&assigned\\_name=MW-14&store\\_num=](https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&samp_date=&global_id=T0603100023&assigned_name=MW-14&store_num=)  
GeoTracker Data: [https://geotracker.waterboards.ca.gov/profile\\_report.asp?cmd=MWEDFResults&global\\_id=T0603100023&assigned\\_name=MW-14](https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&global_id=T0603100023&assigned_name=MW-14)

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID  
Direction  
Distance  
Elevation

Database EDR ID Number

**C31**  
**WNW**  
**1/2 - 1 Mile**  
**Lower**

**CA WELLS CAEDF0000063692**

|                           |                                                                                                                                                                                                                                                                                                                                                                             |             |            |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------|
| Well ID:                  | T0603100023-MW-12                                                                                                                                                                                                                                                                                                                                                           | Well Type:  | MONITORING |
| Source:                   | EDF                                                                                                                                                                                                                                                                                                                                                                         | Other Name: | MW-12      |
| GAMA PFAS Testing:        | Not Reported                                                                                                                                                                                                                                                                                                                                                                |             |            |
| Groundwater Quality Data: | <a href="https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&amp;samp_date=&amp;global_id=T0603100023&amp;assigned_name=MW-12&amp;store_num=">https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&amp;samp_date=&amp;global_id=T0603100023&amp;assigned_name=MW-12&amp;store_num=</a> |             |            |
| GeoTracker Data:          | <a href="https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&amp;global_id=T0603100023&amp;assigned_name=MW-12">https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&amp;global_id=T0603100023&amp;assigned_name=MW-12</a>                                                                                                       |             |            |

**C32**  
**WNW**  
**1/2 - 1 Mile**  
**Lower**

**CA WELLS CAEDF0000130330**

|                           |                                                                                                                                                                                                                                                                                                                                                                             |             |            |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------|
| Well ID:                  | T0603100023-MW-11                                                                                                                                                                                                                                                                                                                                                           | Well Type:  | MONITORING |
| Source:                   | EDF                                                                                                                                                                                                                                                                                                                                                                         | Other Name: | MW-11      |
| GAMA PFAS Testing:        | Not Reported                                                                                                                                                                                                                                                                                                                                                                |             |            |
| Groundwater Quality Data: | <a href="https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&amp;samp_date=&amp;global_id=T0603100023&amp;assigned_name=MW-11&amp;store_num=">https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&amp;samp_date=&amp;global_id=T0603100023&amp;assigned_name=MW-11&amp;store_num=</a> |             |            |
| GeoTracker Data:          | <a href="https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&amp;global_id=T0603100023&amp;assigned_name=MW-11">https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&amp;global_id=T0603100023&amp;assigned_name=MW-11</a>                                                                                                       |             |            |

**C33**  
**WNW**  
**1/2 - 1 Mile**  
**Lower**

**CA WELLS CAEDF0000115365**

|                           |                                                                                                                                                                                                                                                                                                                                                                             |             |            |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------|
| Well ID:                  | T0603100023-MW-10                                                                                                                                                                                                                                                                                                                                                           | Well Type:  | MONITORING |
| Source:                   | EDF                                                                                                                                                                                                                                                                                                                                                                         | Other Name: | MW-10      |
| GAMA PFAS Testing:        | Not Reported                                                                                                                                                                                                                                                                                                                                                                |             |            |
| Groundwater Quality Data: | <a href="https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&amp;samp_date=&amp;global_id=T0603100023&amp;assigned_name=MW-10&amp;store_num=">https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&amp;samp_date=&amp;global_id=T0603100023&amp;assigned_name=MW-10&amp;store_num=</a> |             |            |
| GeoTracker Data:          | <a href="https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&amp;global_id=T0603100023&amp;assigned_name=MW-10">https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&amp;global_id=T0603100023&amp;assigned_name=MW-10</a>                                                                                                       |             |            |

**34**  
**ENE**  
**1/2 - 1 Mile**  
**Higher**

**CA WELLS 13789**

|             |                     |             |                              |
|-------------|---------------------|-------------|------------------------------|
| Seq:        | 13789               | Prim sta c: | 18S/21E-35P02 M              |
| Frds no:    | 1610003013          | County:     | 16                           |
| District:   | 12                  | User id:    | CYA                          |
| System no:  | 1610003             | Water type: | G                            |
| Source nam: | WELL 19 - ABANDONED | Station ty: | WELL/AMBNT/MUN/INTAKE/SUPPLY |
| Latitude:   | 361900.0            | Longitude:  | 1194000.0                    |
| Precision:  | 8                   | Status:     | AB                           |
| Comment 1:  | Not Reported        | Comment 2:  | Not Reported                 |
| Comment 3:  | Not Reported        | Comment 4:  | Not Reported                 |
| Comment 5:  | Not Reported        | Comment 6:  | Not Reported                 |

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Comment 7: Not Reported

System no: 1610003  
Hqname: Not Reported  
City: HANFORD  
Zip: 93230  
Pop serv: 37000  
Area serve: HANFORD

System nam: Hanford, City Of  
Address: 400 N. DOUTY STREET  
State: CA  
Zip ext: Not Reported  
Connection: 10813

**35**  
**East**  
**1/2 - 1 Mile**  
**Higher**

**FED USGS USGS40000171955**

|                        |                                      |                              |              |
|------------------------|--------------------------------------|------------------------------|--------------|
| Organization ID:       | USGS-CA                              | Type:                        | Well         |
| Organization Name:     | USGS California Water Science Center | HUC:                         | 18030012     |
| Monitor Location:      | 019S021E02C001M                      | Drainage Area Units:         | Not Reported |
| Description:           | Not Reported                         | Contrib Drainage Area Units: | Not Reported |
| Drainage Area:         | Not Reported                         | Aquifer Type:                | Not Reported |
| Contrib Drainage Area: | Not Reported                         | Well Depth:                  | 125          |
| Aquifer:               | Central Valley aquifer system        | Well Hole Depth:             | Not Reported |
| Formation Type:        | Not Reported                         |                              |              |
| Construction Date:     | 19550101                             |                              |              |
| Well Depth Units:      | ft                                   |                              |              |
| Well Hole Depth Units: | Not Reported                         |                              |              |

**D36**  
**East**  
**1/2 - 1 Mile**  
**Higher**

**CA WELLS CADWR9000025197**

|               |               |                        |              |
|---------------|---------------|------------------------|--------------|
| State Well #: | 19S21E02F001M | Station ID:            | 17243        |
| Well Name:    | 19S21E02F001M | Basin Name:            | Tulare Lake  |
| Well Use:     | Unknown       | Well Type:             | Single Well  |
| Well Depth:   | 0             | Well Completion Rpt #: | Not Reported |

**37**  
**WNW**  
**1/2 - 1 Mile**  
**Lower**

**FED USGS USGS40000171990**

|                        |                                      |                              |              |
|------------------------|--------------------------------------|------------------------------|--------------|
| Organization ID:       | USGS-CA                              | Type:                        | Well         |
| Organization Name:     | USGS California Water Science Center | HUC:                         | 18030012     |
| Monitor Location:      | 019S021E04B001M                      | Drainage Area Units:         | Not Reported |
| Description:           | Not Reported                         | Contrib Drainage Area Units: | Not Reported |
| Drainage Area:         | Not Reported                         | Aquifer Type:                | Not Reported |
| Contrib Drainage Area: | Not Reported                         | Well Depth:                  | 160          |
| Aquifer:               | Central Valley aquifer system        | Well Hole Depth:             | Not Reported |
| Formation Type:        | Not Reported                         |                              |              |
| Construction Date:     | 19540101                             |                              |              |
| Well Depth Units:      | ft                                   |                              |              |
| Well Hole Depth Units: | Not Reported                         |                              |              |

|                                             |              |                     |              |
|---------------------------------------------|--------------|---------------------|--------------|
| Ground water levels,Number of Measurements: | 1            | Level reading date: | 1961-11-21   |
| Feet below surface:                         | 77.50        | Feet to sea level:  | Not Reported |
| Note:                                       | Not Reported |                     |              |



# GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID  
Direction  
Distance  
Elevation

Database EDR ID Number

**D38**  
**East**  
**1/2 - 1 Mile**  
**Higher**

**CA WELLS CADWR0000012706**

|                           |                                                                                                                                                                                                                                                                                                                                                                       |                    |              |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|
| Well ID:                  | 19S21E02F001M                                                                                                                                                                                                                                                                                                                                                         | Well Type:         | UNK          |
| Source:                   | Department of Water Resources                                                                                                                                                                                                                                                                                                                                         |                    |              |
| Other Name:               | 19S21E02F001M                                                                                                                                                                                                                                                                                                                                                         | GAMA PFAS Testing: | Not Reported |
| Groundwater Quality Data: | <a href="https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&amp;samp_date=&amp;global_id=&amp;assigned_name=19S21E02F001M&amp;store_num=">https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&amp;samp_date=&amp;global_id=&amp;assigned_name=19S21E02F001M&amp;store_num=</a> |                    |              |
| GeoTracker Data:          | Not Reported                                                                                                                                                                                                                                                                                                                                                          |                    |              |

**D39**  
**East**  
**1/2 - 1 Mile**  
**Higher**

**FED USGS USGS40000171934**

|                        |                                      |                              |              |
|------------------------|--------------------------------------|------------------------------|--------------|
| Organization ID:       | USGS-CA                              |                              |              |
| Organization Name:     | USGS California Water Science Center |                              |              |
| Monitor Location:      | 019S021E02F001M                      | Type:                        | Well         |
| Description:           | Not Reported                         | HUC:                         | 18030012     |
| Drainage Area:         | Not Reported                         | Drainage Area Units:         | Not Reported |
| Contrib Drainage Area: | Not Reported                         | Contrib Drainage Area Units: | Not Reported |
| Aquifer:               | Central Valley aquifer system        |                              |              |
| Formation Type:        | Alluvium Above E-Clay                | Aquifer Type:                | Not Reported |
| Construction Date:     | 19600101                             | Well Depth:                  | 398          |
| Well Depth Units:      | ft                                   | Well Hole Depth:             | Not Reported |
| Well Hole Depth Units: | Not Reported                         |                              |              |

|                                             |              |                     |              |
|---------------------------------------------|--------------|---------------------|--------------|
| Ground water levels,Number of Measurements: | 1            | Level reading date: | 1961-11-21   |
| Feet below surface:                         | 87.40        | Feet to sea level:  | Not Reported |
| Note:                                       | Not Reported |                     |              |

**D40**  
**East**  
**1/2 - 1 Mile**  
**Higher**

**CA WELLS CAUSGSN00008167**

|                           |                                                                                                                                                                                                                                                                                                                                                                                             |                    |              |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|
| Well ID:                  | USGS-361828119395001                                                                                                                                                                                                                                                                                                                                                                        | Well Type:         | UNK          |
| Source:                   | United States Geological Survey                                                                                                                                                                                                                                                                                                                                                             |                    |              |
| Other Name:               | USGS-361828119395001                                                                                                                                                                                                                                                                                                                                                                        | GAMA PFAS Testing: | Not Reported |
| Groundwater Quality Data: | <a href="https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=USGSNEW&amp;samp_date=&amp;global_id=&amp;assigned_name=USGS-361828119395001&amp;store_num=">https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=USGSNEW&amp;samp_date=&amp;global_id=&amp;assigned_name=USGS-361828119395001&amp;store_num=</a> |                    |              |
| GeoTracker Data:          | Not Reported                                                                                                                                                                                                                                                                                                                                                                                |                    |              |

**E41**  
**North**  
**1/2 - 1 Mile**  
**Higher**

**CA WELLS CADWR9000025342**

|               |               |                        |              |
|---------------|---------------|------------------------|--------------|
| State Well #: | 18S21E34F001M | Station ID:            | 16660        |
| Well Name:    | Not Reported  | Basin Name:            | Tulare Lake  |
| Well Use:     | Unknown       | Well Type:             | Unknown      |
| Well Depth:   | 0             | Well Completion Rpt #: | Not Reported |

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID  
Direction  
Distance  
Elevation

Database EDR ID Number

**E42**  
**North**  
**1/2 - 1 Mile**  
**Higher**

**CA WELLS CADWR0000003421**

|                           |                                                                                                                                                                                                                                                                                                                                                                       |                    |              |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|
| Well ID:                  | 18S21E34F001M                                                                                                                                                                                                                                                                                                                                                         | Well Type:         | UNK          |
| Source:                   | Department of Water Resources                                                                                                                                                                                                                                                                                                                                         |                    |              |
| Other Name:               | 18S21E34F001M                                                                                                                                                                                                                                                                                                                                                         | GAMA PFAS Testing: | Not Reported |
| Groundwater Quality Data: | <a href="https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&amp;samp_date=&amp;global_id=&amp;assigned_name=18S21E34F001M&amp;store_num=">https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&amp;samp_date=&amp;global_id=&amp;assigned_name=18S21E34F001M&amp;store_num=</a> |                    |              |
| GeoTracker Data:          | Not Reported                                                                                                                                                                                                                                                                                                                                                          |                    |              |

**43**  
**North**  
**1/2 - 1 Mile**  
**Higher**

**FED USGS USGS40000172122**

|                        |                                      |                             |              |
|------------------------|--------------------------------------|-----------------------------|--------------|
| Organization ID:       | USGS-CA                              |                             |              |
| Organization Name:     | USGS California Water Science Center |                             |              |
| Monitor Location:      | 018S021E34F001M                      | Type:                       | Well         |
| Description:           | Not Reported                         | HUC:                        | 18030012     |
| Drainage Area:         | Not Reported                         | Drainage Area Units:        | Not Reported |
| Contrib Drainage Area: | Not Reported                         | Contrib Drainage Area Unts: | Not Reported |
| Aquifer:               | Central Valley aquifer system        |                             |              |
| Formation Type:        | Not Reported                         | Aquifer Type:               | Not Reported |
| Construction Date:     | Not Reported                         | Well Depth:                 | 80           |
| Well Depth Units:      | ft                                   | Well Hole Depth:            | Not Reported |
| Well Hole Depth Units: | Not Reported                         |                             |              |

**44**  
**WNW**  
**1/2 - 1 Mile**  
**Lower**

**CA WELLS CADWR9000025225**

|               |               |                        |              |
|---------------|---------------|------------------------|--------------|
| State Well #: | 19S21E04B001M | Station ID:            | 17247        |
| Well Name:    | Not Reported  | Basin Name:            | Tulare Lake  |
| Well Use:     | Unknown       | Well Type:             | Unknown      |
| Well Depth:   | 0             | Well Completion Rpt #: | Not Reported |

**45**  
**SE**  
**1/2 - 1 Mile**  
**Lower**

**CA WELLS CADWR9000025104**

|               |               |                        |              |
|---------------|---------------|------------------------|--------------|
| State Well #: | 19S21E02N001M | Station ID:            | 35756        |
| Well Name:    | 19S21E02N001M | Basin Name:            | Tulare Lake  |
| Well Use:     | Unknown       | Well Type:             | Single Well  |
| Well Depth:   | 0             | Well Completion Rpt #: | Not Reported |

# GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

## RADON

### AREA RADON INFORMATION

State Database: CA Radon

#### Radon Test Results

| Zipcode | Num Tests | > 4 pCi/L |
|---------|-----------|-----------|
| 93230   | 24        | 1         |

Federal EPA Radon Zone for KINGS County: 3

Note: Zone 1 indoor average level > 4 pCi/L.  
 : Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.  
 : Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 93230

Number of sites tested: 6

| Area                    | Average Activity | % <4 pCi/L   | % 4-20 pCi/L | % >20 pCi/L  |
|-------------------------|------------------|--------------|--------------|--------------|
| Living Area - 1st Floor | 2.300 pCi/L      | 83%          | 17%          | 0%           |
| Living Area - 2nd Floor | Not Reported     | Not Reported | Not Reported | Not Reported |
| Basement                | Not Reported     | Not Reported | Not Reported | Not Reported |

# PHYSICAL SETTING SOURCE RECORDS SEARCHED

## TOPOGRAPHIC INFORMATION

### USGS 7.5' Digital Elevation Model (DEM)

Source: United States Geologic Survey

EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

### Current USGS 7.5 Minute Topographic Map

Source: U.S. Geological Survey

## HYDROLOGIC INFORMATION

**Flood Zone Data:** This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.

Source: FEMA

Telephone: 877-336-2627

Date of Government Version: 2003, 2015

**NWI:** National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005, 2010 and 2015 from the U.S. Fish and Wildlife Service.

### State Wetlands Data: Wetland Inventory

Source: Department of Fish and Wildlife

Telephone: 916-445-0411

## HYDROGEOLOGIC INFORMATION

### AQUIFLOW<sup>R</sup> Information System

Source: EDR proprietary database of groundwater flow information

EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

## GEOLOGIC INFORMATION

### Geologic Age and Rock Stratigraphic Unit

Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

### STATSGO: State Soil Geographic Database

Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)

The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

### SSURGO: Soil Survey Geographic Database

Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)

Telephone: 800-672-5559

SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

# PHYSICAL SETTING SOURCE RECORDS SEARCHED

## LOCAL / REGIONAL WATER AGENCY RECORDS

### FEDERAL WATER WELLS

#### PWS: Public Water Systems

Source: EPA/Office of Drinking Water

Telephone: 202-564-3750

Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

#### PWS ENF: Public Water Systems Violation and Enforcement Data

Source: EPA/Office of Drinking Water

Telephone: 202-564-3750

Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

#### USGS Water Wells: USGS National Water Inventory System (NWIS)

This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

## OTHER STATE DATABASE INFORMATION

### Groundwater Ambient Monitoring & Assessment Program

State Water Resources Control Board

Telephone: 916-341-5577

The GAMA Program is California's comprehensive groundwater quality monitoring program. GAMA collects data by testing the untreated, raw water in different types of wells for naturally-occurring and man-made chemicals. The GAMA data includes Domestic, Monitoring and Municipal well types from the following sources, Department of Water Resources, Department of Health Services, EDF, Agricultural Lands, Lawrence Livermore National Laboratory, Department of Pesticide Regulation, United States Geological Survey, Groundwater Ambient Monitoring and Assessment Program and Local Groundwater Projects.

### Water Well Database

Source: Department of Water Resources

Telephone: 916-651-9648

### California Drinking Water Quality Database

Source: Department of Public Health

Telephone: 916-324-2319

The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

### Geothermal Wells Listing

Department of Conservation

Telephone: 916-445-9686

Geothermal well means a well constructed to extract or return water to the ground after it has been used for heating or cooling purposes. Geothermal wells in California (except for wells on federal leases which are administered by the Bureau of Land Management) are permitted, drilled, operated, and permanently sealed and closed (plugged and abandoned) under requirements and procedures administered by the Geothermal Section of the Department of Conservation's Geologic Energy Management Division (CalGEM, formerly DOGGR).

### California Oil and Gas Well Locations

Source: Dept of Conservation, Geologic Energy Management Division

Telephone: 916-323-1779

Oil and Gas well locations in the state.

## PHYSICAL SETTING SOURCE RECORDS SEARCHED

### California Earthquake Fault Lines

Source: California Division of Mines and Geology

The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

### RADON

#### State Database: CA Radon

Source: Department of Public Health

Telephone: 916-210-8558

Radon Database for California

#### Area Radon Information

Source: USGS

Telephone: 703-356-4020

The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

#### EPA Radon Zones

Source: EPA

Telephone: 703-356-4020

Sections 307 & 309 of IRRA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

### OTHER

Airport Landing Facilities: Private and public use landing facilities

Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater

Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

### STREET AND ADDRESS INFORMATION

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# **APPENDIX F**

## **VAPOR ENCROACHMENT**

**VTTM 943**

Hanford Armona Road

Hanford, CA 93230

Inquiry Number: 7674781.2s

June 27, 2024

## EDR Vapor Encroachment Screen

Prepared using EDR's Vapor Encroachment Worksheet



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***Thank you for your business.***  
Please contact EDR at 1-800-352-0050  
with any questions or comments.

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The EDR Vapor Encroachment Worksheet enables EDR's customers to make certain online modifications that effects maps, text and calculations contained in this Report. As a result, maps, text and calculations contained in this Report may have been so modified. EDR has not taken any action to verify any such modifications, and this report and the findings set forth herein must be read in light of this fact. Environmental Data Resources shall not be responsible for any customer's decision to include or not include in any final report any records determined to be within the relevant minimum search distances.

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## EXECUTIVE SUMMARY

A search of available environmental records was conducted by EDR. The report was designed to assist parties seeking to meet the search requirements of the ASTM Standard Practice for Assessment of Vapor Encroachment into Structures on Property Involved in Real Estate Transactions (E 2600).

| <b>STANDARD ENVIRONMENTAL RECORDS</b>                                   | <b>Default Area of Concern (Miles)*</b> | <b>property</b> | <b>1/10</b> | <b>&gt; 1/10</b> |
|-------------------------------------------------------------------------|-----------------------------------------|-----------------|-------------|------------------|
| Lists of Federal NPL (Superfund) sites                                  | 1.0                                     | 0               | 0           | 0                |
| Lists of Federal Delisted NPL sites                                     | 1.0                                     | 0               | 0           | 0                |
| Lists of Federal sites subject to CERCLA removals and CERCLA orders     | 0.5                                     | 0               | 0           | 0                |
| Lists of Federal CERCLA sites with NFRAP                                | 0.5                                     | 0               | 0           | 0                |
| Lists of Federal RCRA facilities undergoing Corrective Action           | 1.0                                     | 0               | 0           | 0                |
| Lists of Federal RCRA TSD facilities                                    | 0.5                                     | 0               | 0           | 0                |
| Lists of Federal RCRA generators                                        | 0.25                                    | 0               | 0           | 0                |
| Federal institutional controls / engineering controls registries        | 0.5                                     | 0               | 0           | 0                |
| Federal ERNS list                                                       | 0.001                                   | 0               | 0           | -                |
| Lists of state- and tribal (Superfund) equivalent sites                 | 1.0                                     | 0               | 0           | 0                |
| Lists of state- and tribal hazardous waste facilities                   | 1.0                                     | 0               | 0           | 0                |
| Lists of state and tribal landfills and solid waste disposal facilities | 0.5                                     | 0               | 0           | 0                |
| Lists of state and tribal leaking storage tanks                         | 0.5                                     | 0               | 0           | 0                |
| Lists of state and tribal registered storage tanks                      | 0.25                                    | 0               | 0           | 0                |
| State and tribal institutional control / engineering control registries | not searched                            | -               | -           | -                |
| Lists of state and tribal voluntary cleanup sites                       | 0.5                                     | 0               | 0           | 0                |
| Lists of state and tribal brownfield sites                              | 0.5                                     | 0               | 0           | 0                |

### ADDITIONAL ENVIRONMENTAL RECORDS

|                                                      |      |   |   |   |
|------------------------------------------------------|------|---|---|---|
| Local Brownfield lists                               | 0.5  | 0 | 0 | 0 |
| Local Lists of Landfill / Solid Waste Disposal Sites | 0.5  | 0 | 0 | 0 |
| Local Lists of Hazardous waste / Contaminated Sites  | 1.0  | 0 | 0 | 0 |
| Local Lists of Registered Storage Tanks              | 0.25 | 0 | 0 | 0 |
| Local Land Records                                   | 0.5  | 0 | 0 | 0 |
| Records of Emergency Release Reports                 | 0.5  | 0 | 0 | 0 |
| Other Ascertainable Records                          | 1.0  | 0 | 0 | 0 |

### EDR HIGH RISK HISTORICAL RECORDS

|                                    |       |   |   |   |
|------------------------------------|-------|---|---|---|
| EDR Exclusive Records              | 1.0   | 0 | 0 | 0 |
| Exclusive Recovered Govt. Archives | 0.001 | 0 | 0 | - |

## EXECUTIVE SUMMARY

### EDR RECOVERED GOVERNMENT ARCHIVES

|                                    |       |   |   |   |
|------------------------------------|-------|---|---|---|
| EDR Exclusive Records              | 1.0   | 0 | 0 | 0 |
| Exclusive Recovered Govt. Archives | 0.001 | 0 | 0 | - |

\*The Default Area of Concern may be adjusted by the environmental professional using experience and professional judgement. Each category may include several databases, and each database may have a different distance. A list of individual databases is provided at the back of this report.

## EXECUTIVE SUMMARY

### TARGET PROPERTY INFORMATION

#### ADDRESS

VTTM 943  
HANFORD ARMONA ROAD  
HANFORD, CA 93230

#### COORDINATES

|                   |                                 |
|-------------------|---------------------------------|
| Latitude (North): | 36.309918 - 36° 18' 35.70282"   |
| Longitude (West): | 119.680091 - 119° 40' 48.33069" |
| Elevation:        | 243 ft. above sea level         |

## EXECUTIVE SUMMARY

### SEARCH RESULTS

Unmappable (orphan) sites are not considered in the foregoing analysis.

### STANDARD ENVIRONMENTAL RECORDS

| <u>Name</u>  | <u>Address</u> | <u>Dist/Dir</u> | <u>Map ID</u> | <u>Page</u> |
|--------------|----------------|-----------------|---------------|-------------|
| Not Reported |                |                 |               |             |

### ADDITIONAL ENVIRONMENTAL RECORDS

| <u>Name</u>  | <u>Address</u> | <u>Dist/Dir</u> | <u>Map ID</u> | <u>Page</u> |
|--------------|----------------|-----------------|---------------|-------------|
| Not Reported |                |                 |               |             |

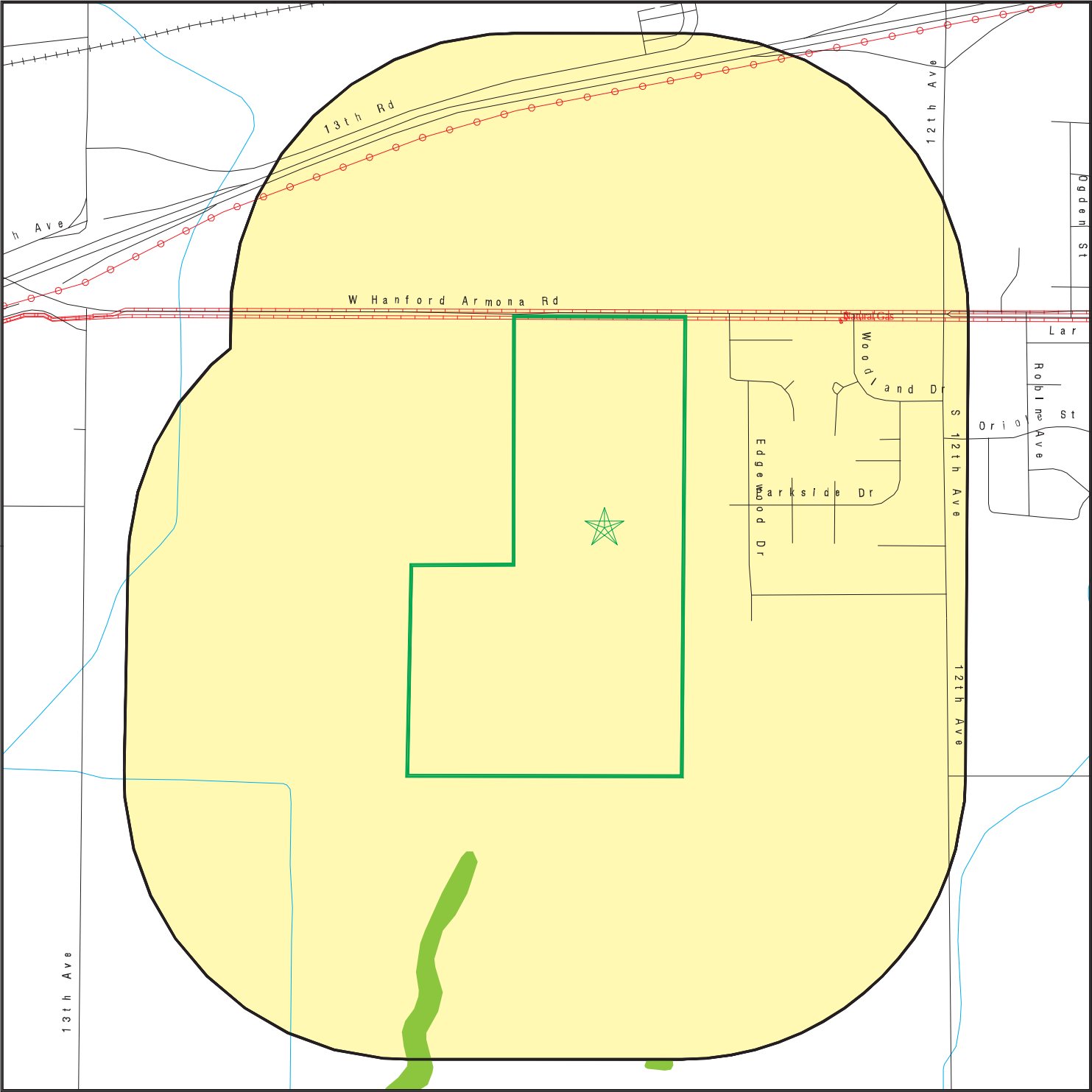
### EDR HIGH RISK HISTORICAL RECORDS

| <u>Name</u>  | <u>Address</u> | <u>Dist/Dir</u> | <u>Map ID</u> | <u>Page</u> |
|--------------|----------------|-----------------|---------------|-------------|
| Not Reported |                |                 |               |             |

### EDR RECOVERED GOVERNMENT ARCHIVES

| <u>Name</u>  | <u>Address</u> | <u>Dist/Dir</u> | <u>Map ID</u> | <u>Page</u> |
|--------------|----------------|-----------------|---------------|-------------|
| Not Reported |                |                 |               |             |

PRIMARY MAP - 7674781.2S



Target Property

- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites

0 300 1/3 1/2 Miles

- Indian Reservations BIA
- Power transmission lines
- Pipelines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands

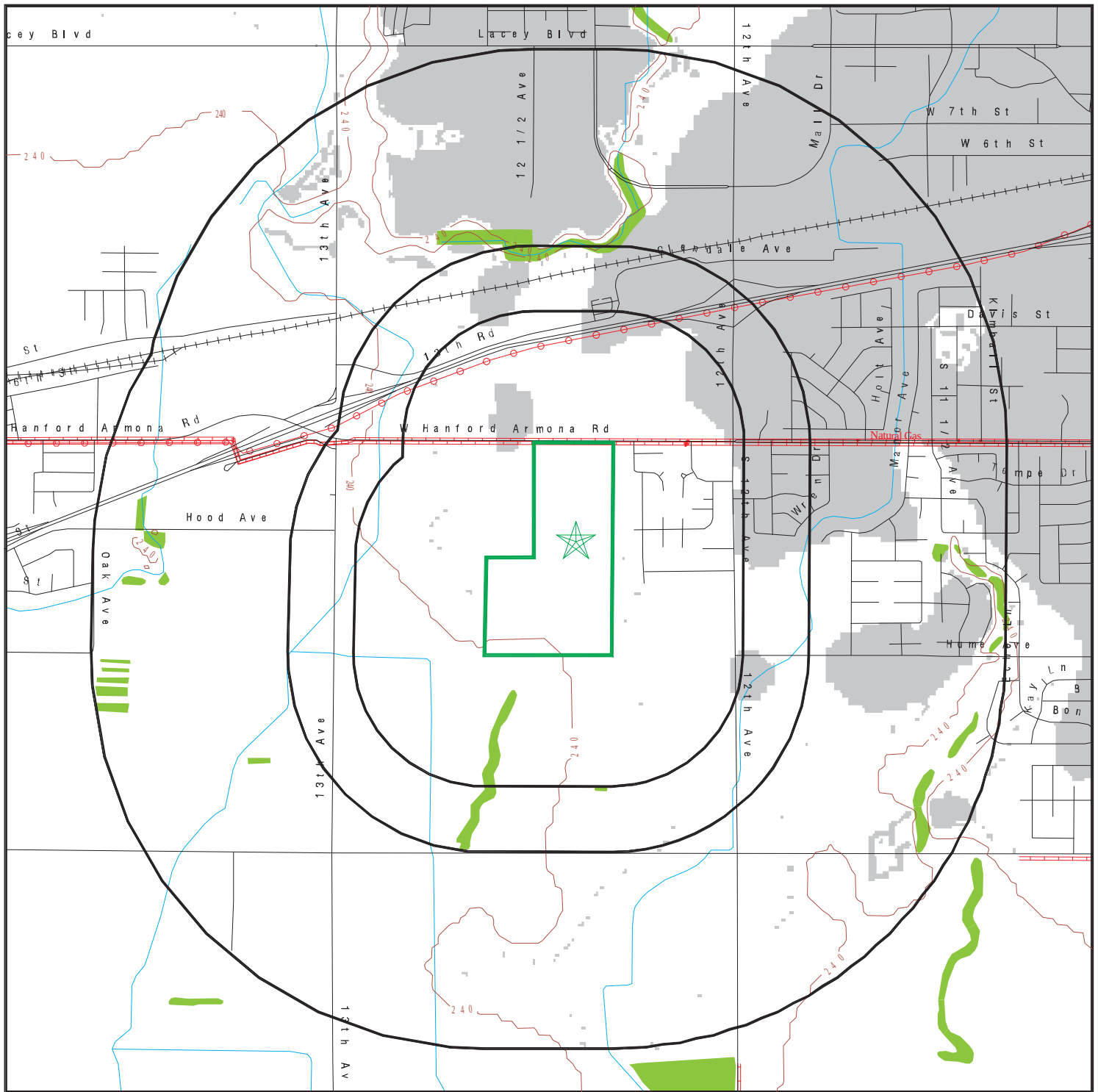
Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: VTTM 943  
ADDRESS: Hanford Armona Road  
Hanford CA 93230  
LAT/LONG: 36.309918 / 119.680091

CLIENT: Geotek  
CONTACT: Kyle Richard Mchargue  
INQUIRY #: 7674781.2s  
DATE: June 06, 2024 6:57 pm

# SECONDARY MAP - 7674781.2S



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

Indian Reservations BIA

Power transmission lines

Pipelines

Special Flood Hazard Area (1%)

0.2% Annual Chance Flood Hazard

National Wetland Inventory

State Wetlands

Upgradient Area

Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: VTTM 943  
ADDRESS: Hanford Armona Road  
Hanford CA 93230  
LAT/LONG: 36.309918 / 119.680091

CLIENT: Geotek  
CONTACT: Kyle Richard Mchargue  
INQUIRY #: 7674781.2s  
DATE: June 06, 2024 6:57 pm

MAP FINDINGS

LEGEND

| FACILITY NAME                                                     |                    |                         | EDR SITE ID NUMBER                                                                                                                                                                                                             |
|-------------------------------------------------------------------|--------------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FACILITY ADDRESS, CITY, ST, ZIP                                   |                    |                         |                                                                                                                                                                                                                                |
| ◆ MAP ID#                                                         | Direction          | (Distance feet / miles) | ASTM 2600 Record Sources found in this report. Each database searched has been assigned to one or more categories. For detailed information about categorization, see the section of the report Records Searched and Currency. |
|                                                                   | Distance           | Range                   |                                                                                                                                                                                                                                |
|                                                                   | Relative Elevation | Feet Above Sea Level    |                                                                                                                                                                                                                                |
| Worksheet:                                                        |                    |                         |                                                                                                                                                                                                                                |
| Comments:                                                         |                    |                         |                                                                                                                                                                                                                                |
| Comments may be added on the online Vapor Encroachment Worksheet. |                    |                         |                                                                                                                                                                                                                                |

DATABASE ACRONYM: Applicable categories (A hoverbox with database description).



# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

| St                                                                      | Acronym          | Full Name                                                    | Government Agency                             | Gov Date   | Arvl. Date | Active Date |
|-------------------------------------------------------------------------|------------------|--------------------------------------------------------------|-----------------------------------------------|------------|------------|-------------|
| <b>ENVIRONMENTAL RECORDS</b>                                            |                  |                                                              |                                               |            |            |             |
| <b>Federal NPL site list</b>                                            |                  |                                                              |                                               |            |            |             |
| US                                                                      | NPL              | National Priority List                                       | EPA                                           | 02/29/2024 | 03/01/2024 | 03/27/2024  |
| US                                                                      | Proposed NPL     | Proposed National Priority List Sites                        | EPA                                           | 02/29/2024 | 03/01/2024 | 03/27/2024  |
| US                                                                      | NPL LIENS        | Federal Superfund Liens                                      | EPA                                           | 10/15/1991 | 02/02/1994 | 03/30/1994  |
| <b>Federal CERCLIS list</b>                                             |                  |                                                              |                                               |            |            |             |
| US                                                                      | SEMS             | Superfund Enterprise Management System                       | EPA                                           | 04/22/2024 | 05/01/2024 | 05/24/2024  |
| <b>Federal RCRA CORRACTS facilities list</b>                            |                  |                                                              |                                               |            |            |             |
| US                                                                      | CORRACTS         | Corrective Action Report                                     | EPA                                           | 12/04/2023 | 12/06/2023 | 12/12/2023  |
| <b>Federal RCRA TSD facilities list</b>                                 |                  |                                                              |                                               |            |            |             |
| US                                                                      | RCRA-TSDF        | RCRA - Treatment, Storage and Disposal                       | Environmental Protection Agency               | 12/04/2023 | 12/06/2023 | 12/12/2023  |
| <b>Federal RCRA generators list</b>                                     |                  |                                                              |                                               |            |            |             |
| US                                                                      | RCRA-LQG         | RCRA - Large Quantity Generators                             | Environmental Protection Agency               | 12/04/2023 | 12/06/2023 | 12/12/2023  |
| US                                                                      | RCRA-SQG         | RCRA - Small Quantity Generators                             | Environmental Protection Agency               | 12/04/2023 | 12/06/2023 | 12/12/2023  |
| US                                                                      | RCRA-VSQG        | RCRA - Very Small Quantity Generators (Formerly Conditionall | Environmental Protection Agency               | 12/04/2023 | 12/06/2023 | 12/12/2023  |
| <b>Federal institutional controls / engineering controls registries</b> |                  |                                                              |                                               |            |            |             |
| US                                                                      | LUCIS            | Land Use Control Information System                          | Department of the Navy                        | 02/14/2024 | 02/16/2024 | 04/04/2024  |
| US                                                                      | US ENG CONTROLS  | Engineering Controls Sites List                              | Environmental Protection Agency               | 02/13/2024 | 02/21/2024 | 04/04/2024  |
| US                                                                      | US INST CONTROLS | Institutional Controls Sites List                            | Environmental Protection Agency               | 02/13/2024 | 02/21/2024 | 04/04/2024  |
| <b>Federal ERNS list</b>                                                |                  |                                                              |                                               |            |            |             |
| US                                                                      | ERNS             | Emergency Response Notification System                       | National Response Center, United States Coast | 12/12/2023 | 12/13/2023 | 02/28/2024  |
| <b>State and tribal - equivalent NPL</b>                                |                  |                                                              |                                               |            |            |             |
| CA                                                                      | RESPONSE         | State Response Sites                                         | Department of Toxic Substances Control        | 01/22/2024 | 01/23/2024 | 04/08/2024  |
| <b>State and tribal - equivalent CERCLIS</b>                            |                  |                                                              |                                               |            |            |             |
| CA                                                                      | ENVIROSTOR       | EnviroStor Database                                          | Department of Toxic Substances Control        | 01/22/2024 | 01/23/2024 | 04/08/2024  |
| <b>State and tribal landfill / solid waste disposal</b>                 |                  |                                                              |                                               |            |            |             |
| CA                                                                      | SWF/LF (SWIS)    | Solid Waste Information System                               | Department of Resources Recycling and Recover | 02/05/2024 | 02/06/2024 | 04/26/2024  |
| <b>State and tribal leaking storage tank lists</b>                      |                  |                                                              |                                               |            |            |             |
| CA                                                                      | LUST REG 6V      | Leaking Underground Storage Tank Case Listing                | California Regional Water Quality Control Boa | 06/07/2005 | 06/07/2005 | 06/29/2005  |
| CA                                                                      | LUST REG 9       | Leaking Underground Storage Tank Report                      | California Regional Water Quality Control Boa | 03/01/2001 | 04/23/2001 | 05/21/2001  |
| CA                                                                      | LUST REG 8       | Leaking Underground Storage Tanks                            | California Regional Water Quality Control Boa | 02/14/2005 | 02/15/2005 | 03/28/2005  |
| CA                                                                      | LUST REG 7       | Leaking Underground Storage Tank Case Listing                | California Regional Water Quality Control Boa | 02/26/2004 | 02/26/2004 | 03/24/2004  |
| CA                                                                      | LUST REG 5       | Leaking Underground Storage Tank Database                    | California Regional Water Quality Control Boa | 07/01/2008 | 07/22/2008 | 07/31/2008  |
| CA                                                                      | LUST REG 4       | Underground Storage Tank Leak List                           | California Regional Water Quality Control Boa | 09/07/2004 | 09/07/2004 | 10/12/2004  |
| CA                                                                      | LUST REG 3       | Leaking Underground Storage Tank Database                    | California Regional Water Quality Control Boa | 05/19/2003 | 05/19/2003 | 06/02/2003  |

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

| St                                                    | Acronym            | Full Name                                                    | Government Agency                             | Gov Date   | Arvl Date  | Active Date |
|-------------------------------------------------------|--------------------|--------------------------------------------------------------|-----------------------------------------------|------------|------------|-------------|
| CA                                                    | LUST REG 2         | Fuel Leak List                                               | California Regional Water Quality Control Boa | 09/30/2004 | 10/20/2004 | 11/19/2004  |
| CA                                                    | LUST               | Leaking Underground Fuel Tank Report (GEOTRACKER)            | State Water Resources Control Board           | 03/04/2024 | 03/05/2024 | 05/24/2024  |
| CA                                                    | LUST REG 6L        | Leaking Underground Storage Tank Case Listing                | California Regional Water Quality Control Boa | 09/09/2003 | 09/10/2003 | 10/07/2003  |
| CA                                                    | LUST REG 1         | Active Toxic Site Investigation                              | California Regional Water Quality Control Boa | 02/01/2001 | 02/28/2001 | 03/29/2001  |
| US                                                    | INDIAN LUST R8     | Leaking Underground Storage Tanks on Indian Land             | EPA Region 8                                  | 10/25/2023 | 01/17/2024 | 03/13/2024  |
| US                                                    | INDIAN LUST R10    | Leaking Underground Storage Tanks on Indian Land             | EPA Region 10                                 | 10/25/2023 | 01/17/2024 | 03/13/2024  |
| US                                                    | INDIAN LUST R7     | Leaking Underground Storage Tanks on Indian Land             | EPA Region 7                                  | 10/25/2023 | 01/17/2024 | 03/13/2024  |
| US                                                    | INDIAN LUST R9     | Leaking Underground Storage Tanks on Indian Land             | Environmental Protection Agency               | 10/25/2023 | 01/17/2024 | 03/13/2024  |
| US                                                    | INDIAN LUST R5     | Leaking Underground Storage Tanks on Indian Land             | EPA, Region 5                                 | 10/04/2023 | 01/17/2024 | 03/13/2024  |
| US                                                    | INDIAN LUST R4     | Leaking Underground Storage Tanks on Indian Land             | EPA Region 4                                  | 10/25/2023 | 01/17/2024 | 03/13/2024  |
| US                                                    | INDIAN LUST R1     | Leaking Underground Storage Tanks on Indian Land             | EPA Region 1                                  | 10/25/2023 | 01/17/2024 | 03/13/2024  |
| US                                                    | INDIAN LUST R6     | Leaking Underground Storage Tanks on Indian Land             | EPA Region 6                                  | 10/25/2023 | 01/17/2024 | 03/13/2024  |
| CA                                                    | CPS-SLIC           | Statewide SLIC Cases (GEOTRACKER)                            | State Water Resources Control Board           | 03/04/2024 | 03/05/2024 | 05/24/2024  |
| CA                                                    | SLIC REG 1         | Active Toxic Site Investigations                             | California Regional Water Quality Control Boa | 04/03/2003 | 04/07/2003 | 04/25/2003  |
| CA                                                    | SLIC REG 2         | Spills, Leaks, Investigation & Cleanup Cost Recovery Listing | Regional Water Quality Control Board San Fran | 09/30/2004 | 10/20/2004 | 11/19/2004  |
| CA                                                    | SLIC REG 3         | Spills, Leaks, Investigation & Cleanup Cost Recovery Listing | California Regional Water Quality Control Boa | 05/18/2006 | 05/18/2006 | 06/15/2006  |
| CA                                                    | SLIC REG 4         | Spills, Leaks, Investigation & Cleanup Cost Recovery Listing | Region Water Quality Control Board Los Angele | 11/17/2004 | 11/18/2004 | 01/04/2005  |
| CA                                                    | SLIC REG 5         | Spills, Leaks, Investigation & Cleanup Cost Recovery Listing | Regional Water Quality Control Board Central  | 04/01/2005 | 04/05/2005 | 04/21/2005  |
| CA                                                    | SLIC REG 6V        | Spills, Leaks, Investigation & Cleanup Cost Recovery Listing | Regional Water Quality Control Board, Victorv | 05/24/2005 | 05/25/2005 | 06/16/2005  |
| CA                                                    | SLIC REG 6L        | SLIC Sites                                                   | California Regional Water Quality Control Boa | 09/07/2004 | 09/07/2004 | 10/12/2004  |
| CA                                                    | SLIC REG 7         | SLIC List                                                    | California Regional Quality Control Board, Co | 11/24/2004 | 11/29/2004 | 01/04/2005  |
| CA                                                    | SLIC REG 8         | Spills, Leaks, Investigation & Cleanup Cost Recovery Listing | California Region Water Quality Control Board | 04/03/2008 | 04/03/2008 | 04/14/2008  |
| CA                                                    | SLIC REG 9         | Spills, Leaks, Investigation & Cleanup Cost Recovery Listing | California Regional Water Quality Control Boa | 09/10/2007 | 09/11/2007 | 09/28/2007  |
| <b>State and tribal registered storage tank lists</b> |                    |                                                              |                                               |            |            |             |
| CA                                                    | UST                | Active UST Facilities                                        | SWRCB                                         | 03/04/2024 | 03/05/2024 | 05/29/2024  |
| CA                                                    | UST CLOSURE        | Proposed Closure of Underground Storage Tank (UST) Cases     | State Water Resources Control Board           | 02/13/2024 | 03/05/2024 | 06/03/2024  |
| CA                                                    | MILITARY UST SITES | Military UST Sites (GEOTRACKER)                              | State Water Resources Control Board           | 03/04/2024 | 03/05/2024 | 05/24/2024  |
| CA                                                    | AST                | Aboveground Petroleum Storage Tank Facilities                | California Environmental Protection Agency    | 07/06/2016 | 07/12/2016 | 09/19/2016  |
| US                                                    | INDIAN UST R4      | Underground Storage Tanks on Indian Land                     | EPA Region 4                                  | 10/24/2023 | 01/17/2024 | 03/13/2024  |
| US                                                    | INDIAN UST R10     | Underground Storage Tanks on Indian Land                     | EPA Region 10                                 | 10/24/2023 | 01/17/2024 | 03/13/2024  |
| US                                                    | INDIAN UST R6      | Underground Storage Tanks on Indian Land                     | EPA Region 6                                  | 10/24/2023 | 01/17/2024 | 03/13/2024  |
| US                                                    | INDIAN UST R5      | Underground Storage Tanks on Indian Land                     | EPA Region 5                                  | 10/17/2023 | 01/17/2024 | 03/13/2024  |
| US                                                    | INDIAN UST R9      | Underground Storage Tanks on Indian Land                     | EPA Region 9                                  | 10/24/2023 | 01/17/2024 | 03/13/2024  |
| US                                                    | INDIAN UST R1      | Underground Storage Tanks on Indian Land                     | EPA, Region 1                                 | 10/24/2023 | 01/17/2024 | 03/13/2024  |
| US                                                    | INDIAN UST R7      | Underground Storage Tanks on Indian Land                     | EPA Region 7                                  | 10/24/2023 | 01/17/2024 | 03/13/2024  |
| US                                                    | INDIAN UST R8      | Underground Storage Tanks on Indian Land                     | EPA Region 8                                  | 10/24/2023 | 01/17/2024 | 03/13/2024  |
| US                                                    | FEMA UST           | Underground Storage Tank Listing                             | FEMA                                          | 11/16/2023 | 11/16/2023 | 02/13/2024  |
| <b>State and tribal voluntary cleanup sites</b>       |                    |                                                              |                                               |            |            |             |
| US                                                    | INDIAN VCP R7      | Voluntary Cleanup Priority Lisitng                           | EPA, Region 7                                 | 03/20/2008 | 04/22/2008 | 05/19/2008  |
| CA                                                    | VCP                | Voluntary Cleanup Program Properties                         | Department of Toxic Substances Control        | 01/22/2024 | 01/23/2024 | 04/08/2024  |
| US                                                    | INDIAN VCP R1      | Voluntary Cleanup Priority Listing                           | EPA, Region 1                                 | 07/27/2015 | 09/29/2015 | 02/18/2016  |

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

| St                                        | Acronym           | Full Name                                                    | Government Agency                              | Gov Date   | Arvl. Date | Active Date |
|-------------------------------------------|-------------------|--------------------------------------------------------------|------------------------------------------------|------------|------------|-------------|
| <b>State and tribal Brownfields sites</b> |                   |                                                              |                                                |            |            |             |
| CA                                        | BROWNFIELDS       | Considered Brownfields Sites Listing                         | State Water Resources Control Board            | 12/13/2023 | 12/13/2023 | 03/07/2024  |
| <b>Other Records</b>                      |                   |                                                              |                                                |            |            |             |
| US                                        | CONSENT           | Superfund (CERCLA) Consent Decrees                           | Department of Justice, Consent Decree Library  | 12/31/2023 | 01/11/2024 | 01/16/2024  |
| US                                        | ROD               | Records Of Decision                                          | EPA                                            | 02/29/2024 | 03/01/2024 | 03/27/2024  |
| US                                        | LIENS 2           | CERCLA Lien Information                                      | Environmental Protection Agency                | 02/29/2024 | 03/01/2024 | 03/27/2024  |
| CA                                        | HIST CAL-SITES    | Calsites Database                                            | Department of Toxic Substance Control          | 08/08/2005 | 08/03/2006 | 08/24/2006  |
| US                                        | DEBRIS REGION 9   | Torres Martinez Reservation Illegal Dump Site Locations      | EPA, Region 9                                  | 01/12/2009 | 05/07/2009 | 09/21/2009  |
| CA                                        | SWRCY             | Recycler Database                                            | Department of Conservation                     | 03/04/2024 | 03/05/2024 | 05/28/2024  |
| CA                                        | CA FID UST        | Facility Inventory Database                                  | California Environmental Protection Agency     | 10/31/1994 | 09/05/1995 | 09/29/1995  |
| CA                                        | HIST UST          | Hazardous Substance Storage Container Database               | State Water Resources Control Board            | 10/15/1990 | 01/25/1991 | 02/12/1991  |
| CA                                        | SAN FRANCISCO AST | Aboveground Storage Tank Site Listing                        | San Francisco County Department of Public Hea  | 02/01/2024 | 02/01/2024 | 04/24/2024  |
| CA                                        | SWEEPS UST        | SWEEPS UST Listing                                           | State Water Resources Control Board            | 06/01/1994 | 07/07/2005 | 08/11/2005  |
| US                                        | US AIRS (AFS)     | Aerometric Information Retrieval System Facility Subsystem ( | EPA                                            | 10/12/2016 | 10/26/2016 | 02/03/2017  |
| US                                        | US AIRS MINOR     | Air Facility System Data                                     | EPA                                            | 10/12/2016 | 10/26/2016 | 02/03/2017  |
| US                                        | PCB TRANSFORMER   | PCB Transformer Registration Database                        | Environmental Protection Agency                | 09/13/2019 | 11/06/2019 | 02/10/2020  |
| US                                        | SCRD DRYCLEANERS  | State Coalition for Remediation of Drycleaners Listing       | Environmental Protection Agency                | 07/30/2021 | 02/03/2023 | 02/10/2023  |
| US                                        | EPA WATCH LIST    | EPA Watch List                                               | Environmental Protection Agency                | 08/30/2013 | 03/21/2014 | 06/17/2014  |
| US                                        | COAL ASH DOE      | Steam-Electric Plant Operation Data                          | Department of Energy                           | 12/31/2022 | 11/27/2023 | 02/22/2024  |
| US                                        | US FIN ASSUR      | Financial Assurance Information                              | Environmental Protection Agency                | 12/11/2023 | 12/13/2023 | 02/28/2024  |
| US                                        | US HIST CDL       | National Clandestine Laboratory Register                     | Drug Enforcement Administration                | 12/31/2023 | 02/21/2024 | 04/04/2024  |
| US                                        | 2020 COR ACTION   | 2020 Corrective Action Program List                          | Environmental Protection Agency                | 09/30/2017 | 05/08/2018 | 07/20/2018  |
| US                                        | LEAD SMELTER 1    | Lead Smelter Sites                                           | Environmental Protection Agency                | 02/29/2024 | 03/01/2024 | 03/27/2024  |
| US                                        | FUSRAP            | Formerly Utilized Sites Remedial Action Program              | Department of Energy                           | 03/03/2023 | 03/03/2023 | 06/09/2023  |
| US                                        | COAL ASH EPA      | Coal Combustion Residues Surface Impoundments List           | Environmental Protection Agency                | 01/12/2017 | 03/05/2019 | 11/11/2019  |
| US                                        | LEAD SMELTER 2    | Lead Smelter Sites                                           | American Journal of Public Health              | 04/05/2001 | 10/27/2010 | 12/02/2010  |
| US                                        | Delisted NPL      | National Priority List Deletions                             | EPA                                            | 02/29/2024 | 03/01/2024 | 03/27/2024  |
| US                                        | SEMS-ARCHIVE      | Superfund Enterprise Management System Archive               | EPA                                            | 04/22/2024 | 05/01/2024 | 05/24/2024  |
| US                                        | RCRA NonGen / NLR | RCRA - Non Generators / No Longer Regulated                  | Environmental Protection Agency                | 12/04/2023 | 12/06/2023 | 12/12/2023  |
| US                                        | HMIRS             | Hazardous Materials Information Reporting System             | U.S. Department of Transportation              | 12/12/2023 | 12/13/2023 | 02/28/2024  |
| US                                        | DOT OPS           | Incident and Accident Data                                   | Department of Transportation, Office of Pipeli | 01/02/2020 | 01/28/2020 | 04/17/2020  |
| US                                        | US CDL            | Clandestine Drug Labs                                        | Drug Enforcement Administration                | 12/31/2023 | 02/21/2024 | 04/04/2024  |
| US                                        | US BROWNFIELDS    | A Listing of Brownfields Sites                               | Environmental Protection Agency                | 03/11/2024 | 03/12/2024 | 05/10/2024  |
| US                                        | DOD               | Department of Defense Sites                                  | USGS                                           | 06/07/2021 | 07/13/2021 | 03/09/2022  |
| US                                        | FEDLAND           | Federal and Indian Lands                                     | U.S. Geological Survey                         | 04/02/2018 | 04/11/2018 | 11/06/2019  |
| US                                        | FUDS              | Formerly Used Defense Sites                                  | U.S. Army Corps of Engineers                   | 01/30/2024 | 02/13/2024 | 04/04/2024  |
| US                                        | UMTRA             | Uranium Mill Tailings Sites                                  | Department of Energy                           | 08/30/2019 | 11/15/2019 | 01/28/2020  |
| US                                        | ODI               | Open Dump Inventory                                          | Environmental Protection Agency                | 06/30/1985 | 08/09/2004 | 09/17/2004  |
| US                                        | US MINES          | Mines Master Index File                                      | Department of Labor, Mine Safety and Health A  | 02/05/2024 | 02/21/2024 | 04/04/2024  |
| US                                        | MINES VIOLATIONS  | MSHA Violation Assessment Data                               | DOL, Mine Safety & Health Admi                 | 01/02/2024 | 01/03/2024 | 01/04/2024  |
| US                                        | US MINES 2        | Ferrous and Nonferrous Metal Mines Database Listing          | USGS                                           | 01/07/2022 | 02/24/2023 | 05/17/2023  |
| US                                        | US MINES 3        | Active Mines & Mineral Plants Database Listing               | USGS                                           | 04/14/2011 | 06/08/2011 | 09/13/2011  |
| US                                        | PRP               | Potentially Responsible Parties                              | EPA                                            | 09/19/2023 | 10/03/2023 | 10/19/2023  |
| US                                        | TRIS              | Toxic Chemical Release Inventory System                      | EPA                                            | 12/31/2022 | 11/13/2023 | 02/07/2024  |
| US                                        | TSCA              | Toxic Substances Control Act                                 | EPA                                            | 12/31/2020 | 06/14/2022 | 03/24/2023  |

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

| St | Acronym               | Full Name                                                     | Government Agency                             | Gov Date   | Arvl. Date | Active Date |
|----|-----------------------|---------------------------------------------------------------|-----------------------------------------------|------------|------------|-------------|
| US | FTTS                  | FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fu  | EPA/Office of Prevention, Pesticides and Toxi | 04/09/2009 | 04/16/2009 | 05/11/2009  |
| US | FTTS INSP             | FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fu  | EPA                                           | 04/09/2009 | 04/16/2009 | 05/11/2009  |
| US | HIST FTTS             | FIFRA/TSCA Tracking System Administrative Case Listing        | Environmental Protection Agency               | 10/19/2006 | 03/01/2007 | 04/10/2007  |
| US | HIST FTTS INSP        | FIFRA/TSCA Tracking System Inspection & Enforcement Case Lis  | Environmental Protection Agency               | 10/19/2006 | 03/01/2007 | 04/10/2007  |
| US | SSTS                  | Section 7 Tracking Systems                                    | EPA                                           | 01/16/2024 | 01/17/2024 | 03/27/2024  |
| US | ICIS                  | Integrated Compliance Information System                      | Environmental Protection Agency               | 11/18/2016 | 11/23/2016 | 02/10/2017  |
| US | PADS                  | PCB Activity Database System                                  | EPA                                           | 03/20/2023 | 04/04/2023 | 06/09/2023  |
| US | MLTS                  | Material Licensing Tracking System                            | Nuclear Regulatory Commission                 | 01/02/2024 | 01/16/2024 | 03/13/2024  |
| US | RADINFO               | Radiation Information Database                                | Environmental Protection Agency               | 07/01/2019 | 07/01/2019 | 09/23/2019  |
| US | FINDS                 | Facility Index System/Facility Registry System                | EPA                                           | 02/09/2024 | 02/27/2024 | 05/24/2024  |
| US | RAATS                 | RCRA Administrative Action Tracking System                    | EPA                                           | 04/17/1995 | 07/03/1995 | 08/07/1995  |
| US | RMP                   | Risk Management Plans                                         | Environmental Protection Agency               | 02/01/2024 | 02/08/2024 | 04/04/2024  |
| US | BRS                   | Biennial Reporting System                                     | EPA/NTIS                                      | 12/31/2021 | 03/09/2023 | 03/20/2023  |
| US | PWS                   | Public Water System Data                                      | EPA                                           | 12/17/2013 | 01/09/2014 | 10/15/2014  |
| US | INDIAN RESERV         | Indian Reservations                                           | USGS                                          | 12/31/2014 | 07/14/2015 | 01/10/2017  |
| US | INDIAN ODI            | Report on the Status of Open Dumps on Indian Lands            | Environmental Protection Agency               | 12/31/1998 | 12/03/2007 | 01/24/2008  |
| US | IHS OPEN DUMPS        | Open Dumps on Indian Land                                     | Department of Health & Human Services, Indian | 04/01/2014 | 08/06/2014 | 01/29/2015  |
| US | ABANDONED MINES       | Abandoned Mines                                               | Department of Interior                        | 11/28/2023 | 11/29/2023 | 12/11/2023  |
| CA | CA BOND EXP. PLAN     | Bond Expenditure Plan                                         | Department of Health Services                 | 01/01/1989 | 07/27/1994 | 08/02/1994  |
| CA | CDL                   | Clandestine Drug Labs                                         | Department of Toxic Substances Control        | 12/31/2021 | 09/28/2023 | 12/18/2023  |
| CA | CHMIRS                | California Hazardous Material Incident Report System          | Office of Emergency Services                  | 12/31/2023 | 01/23/2024 | 04/09/2024  |
| CA | CORTESE               | "Cortese" Hazardous Waste & Substances Sites List             | CAL EPA/Office of Emergency Information       | 12/13/2023 | 12/13/2023 | 03/07/2024  |
| CA | CUPA LIV-PLE          | CUPA Facility Listing                                         | Livermore-Pleasanton Fire Department          | 02/14/2024 | 02/21/2024 | 05/08/2024  |
| CA | DEED                  | Deed Restriction Listing                                      | DTSC and SWRCB                                | 02/26/2024 | 02/27/2024 | 05/14/2024  |
| CA | DRYCLEAN VENTURA      | Drycleaner Facility Listing                                   | Ventura County Air Pollution Control District | 01/04/2024 | 01/16/2024 | 02/08/2024  |
| CA | DRYCLEAN AMADOR       | Amador Air District Drycleaner Facility Listing               | Amador Air Quality Management District        | 04/26/2023 | 04/27/2023 | 07/13/2023  |
| CA | DRYCLEAN SOUTH COAST  | South Coast Air Quality Management District Drycleaner Listi  | South Coast Air Quality Management District   | 02/20/2024 | 02/22/2024 | 05/08/2024  |
| CA | DRYCLEAN MOJAVE       | Mojave Desert Air Quality Management District Drycleaner Fac  | Mojave Desert Air Quality Management District | 04/15/2024 | 04/17/2024 | 04/24/2024  |
| CA | DRYCLEAN BUTTE        | Butte County Air Quality Management District Drycleaner Facil | Butte County Air Quality Management District  | 04/25/2023 | 10/18/2023 | 01/16/2024  |
| CA | DRYCLEAN FEATHER RVR  | Feather River Air Quality Management District Drycleaner Fac  | Feather River Air Quality Management District | 03/08/2023 | 03/09/2023 | 06/05/2023  |
| CA | DRYCLEAN SAN DIEGO    | San Diego County Air Pollution Control District Drycleaner F  | San Diego County Air Pollution Control Distri | 03/19/2024 | 03/21/2024 | 04/12/2024  |
| CA | DRYCLEANERS           | Cleaner Facilities                                            | Department of Toxic Substance Control         | 04/02/2024 | 04/05/2024 | 04/15/2024  |
| CA | DRYCLEAN GRANT        | Grant Recipients List                                         | California Air Resources Board                | 12/31/2021 | 01/26/2024 | 04/16/2024  |
| CA | DRYCLEAN LAKE         | Lake County Air Quality Management District Drycleaner Facil  | Lake County Air Quality Management District   | 02/15/2024 | 02/16/2024 | 05/02/2024  |
| CA | DRYCLEAN AVAQMD       | Antelope Valley Air Quality Management District Drycleaner L  | Antelope Valley Air Quality Management Distri | 02/26/2024 | 02/27/2024 | 05/15/2024  |
| CA | DRYCLEAN MENDOCINO    | Mendocino County Air Quality Management District Drycleaner   | Mendocino County Air Quality Management Distr | 02/26/2024 | 02/28/2024 | 05/15/2024  |
| CA | DRYCLEAN EAST KERN    | Eastern Kern Air Pollution Control District District Dryclea  | Eastern Kern Air Pollution Control District   | 01/12/2023 | 04/26/2023 | 07/14/2023  |
| CA | DRYCLEAN IMPERIAL     | Imperial County Air Pollution Control District Drycleaner Fa  | Imperial County Air Pollution Control Distric | 04/25/2023 | 04/26/2023 | 07/14/2023  |
| CA | DRYCLEAN YOLO-SOLANO  | Yolo-Solano Air Quality Management District Drycleaner Facil  | Yolo-Solano Air Quality Management District   | 01/04/2024 | 01/05/2024 | 03/20/2024  |
| CA | DRYCLEAN SHASTA       | Shasta County Air Quality Management District District Drycl  | Shasta County Air Quality Management District | 04/26/2023 | 04/27/2023 | 07/14/2023  |
| CA | DRYCLEAN MONTEREY BAY | Monterey Bay Air Quality Management District Drycleaner Faci  | Monterey Bay Air Quality Management District  | 01/03/2024 | 01/05/2024 | 03/20/2024  |
| CA | DRYCLEAN SAN LUIS OB  | San Luis Obispo County Air Pollution Control District Drycle  | San Luis Obispo County Air Pollution Control  | 01/03/2024 | 01/04/2024 | 03/20/2024  |
| CA | DRYCLEAN PLACER       | Placer County Air Quality Management District Drycleaner Fac  | Placer County Air Quality Management District | 05/15/2023 | 05/17/2023 | 08/14/2023  |
| CA | DRYCLEAN SAN JOAQUIN  | San Joaquin Valley Air Pollution Control District District D  | San Joaquin Valley Air Pollution Control Dist | 01/04/2024 | 01/04/2024 | 03/21/2024  |
| CA | DRYCLEAN BAY AREA     | Bay Area Air Quality Management District Drycleaner Facility  | Bay Area Air Quality Management District      | 02/20/2019 | 05/30/2019 | 05/01/2023  |
| CA | DRYCLEAN CALAVERAS    | Calaveras County Environmental Management Agency Drycleaner   | Calaveras County Environmental Management Age | 06/17/2019 | 06/19/2019 | 05/01/2023  |
| CA | DRYCLEAN N COAST      | North Coast Unified Air Quality Management District Dryclean  | North Coast Unified Air Quality Management Di | 11/30/2016 | 04/19/2019 | 05/01/2023  |

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

| St | Acronym             | Full Name                                                    | Government Agency                             | Gov Date   | Arvl Date  | Active Date |
|----|---------------------|--------------------------------------------------------------|-----------------------------------------------|------------|------------|-------------|
| CA | DRYCLEAN N SIERRA   | Northern Sierra Air Quality Management District Drycleaner F | Northern Sierra Air Quality Management Distri | 05/07/2019 | 05/07/2019 | 05/01/2023  |
| CA | DRYCLEAN SANTA BARB | Santa Barbara County Air Pollution Control District Dryclean | Santa Barbara County Air Pollution Control Di | 02/19/2019 | 04/17/2019 | 05/01/2023  |
| CA | DRYCLEAN TEHAMA     | Tehama County Air Pollution Control District Drycleaner Faci | Tehama County Air Pollution Control District  | 04/24/2019 | 04/24/2019 | 05/01/2023  |
| CA | DRYCLEAN GLENN      | Glenn County Air Pollution Control District Drycleaner Facil | Glenn County Air Pollution Control District   | 01/08/2024 | 01/10/2024 | 03/27/2024  |
| CA | DRYCLEAN N SONOMA   | Norther Sonoma County County Air Pollution Control District  | Santa Barbara County Air Pollution Control Di | 01/05/2024 | 01/10/2024 | 03/27/2024  |
| CA | DRYCLEAN SACRAMENTO | Sacramento Metropolitan Air Quality Management DistrictDrycl | Sacramento Metropolitan Air Quality Managemen | 01/03/2024 | 01/10/2024 | 03/27/2024  |
| CA | EMI                 | Emissions Inventory Data                                     | California Air Resources Board                | 12/31/2021 | 06/09/2023 | 08/30/2023  |
| CA | ENF                 | Enforcement Action Listing                                   | State Water Resoruces Control Board           | 01/16/2024 | 01/16/2024 | 04/03/2024  |
| CA | FIN ASSURANCE 1     | Financial Assurance Information Listing                      | Department of Toxic Substances Control        | 01/11/2024 | 01/16/2024 | 04/03/2024  |
| CA | FIN ASSURANCE 2     | Financial Assurance Information Listing                      | California Integrated Waste Management Board  | 02/07/2024 | 02/28/2024 | 05/15/2024  |
| CA | HAULERS             | Registered Waste Tire Haulers Listing                        | Integrated Waste Management Board             | 04/04/2024 | 04/05/2024 | 04/15/2024  |
| CA | HAZNET              | Facility and Manifest Data                                   | California Environmental Protection Agency    | 12/31/2023 | 01/03/2024 | 03/21/2024  |
| CA | HIST CORTESE        | Hazardous Waste & Substance Site List                        | Department of Toxic Substances Control        | 04/01/2001 | 01/22/2009 | 04/08/2009  |
| CA | HWP                 | EnviroStor Permitted Facilities Listing                      | Department of Toxic Substances Control        | 02/07/2024 | 02/07/2024 | 02/07/2024  |
| CA | HWT                 | Registered Hazardous Waste Transporter Database              | Department of Toxic Substances Control        | 01/02/2024 | 01/03/2024 | 03/21/2024  |
| CA | ICE                 | Inspection, Compliance and Enforcement                       | Department of Toxic Substances Control        | 02/07/2024 | 02/07/2024 | 02/07/2024  |
| CA | LDS                 | Land Disposal Sites Listing (GEOTRACKER)                     | State Water Quality Control Board             | 03/04/2024 | 03/05/2024 | 05/24/2024  |
| CA | LIENS               | Environmental Liens Listing                                  | Department of Toxic Substances Control        | 02/26/2024 | 02/27/2024 | 05/15/2024  |
| CA | MCS                 | Military Cleanup Sites Listing (GEOTRACKER)                  | State Water Resources Control Board           | 03/04/2024 | 03/05/2024 | 05/24/2024  |
| CA | MINES               | Mines Site Location Listing                                  | Department of Conservation                    | 03/04/2024 | 03/05/2024 | 05/28/2024  |
| CA | MWMP                | Medical Waste Management Program Listing                     | Department of Public Health                   | 01/23/2024 | 02/27/2024 | 05/16/2024  |
| CA | NPDES               | NPDES Permits Listing                                        | State Water Resources Control Board           | 02/05/2024 | 02/06/2024 | 04/25/2024  |
| CA | PEST LIC            | Pesticide Regulation Licenses Listing                        | Department of Pesticide Regulation            | 02/26/2024 | 02/27/2024 | 05/17/2024  |
| CA | PROC                | Certified Processors Database                                | Department of Conservation                    | 03/04/2024 | 03/05/2024 | 05/28/2024  |
| CA | NOTIFY 65           | Proposition 65 Records                                       | State Water Resources Control Board           | 03/08/2024 | 03/08/2024 | 05/29/2024  |
| CA | SAN JOSE HAZMAT     | Hazardous Material Facilities                                | City of San Jose Fire Department              | 11/03/2020 | 11/05/2020 | 01/26/2021  |
| CA | SCH                 | School Property Evaluation Program                           | Department of Toxic Substances Control        | 01/22/2024 | 01/23/2024 | 04/08/2024  |
| CA | SPILLS 90           | SPILLS90 data from FirstSearch                               | FirstSearch                                   | 06/06/2012 | 01/03/2013 | 02/22/2013  |
| CA | TOXIC PITS          | Toxic Pits Cleanup Act Sites                                 | State Water Resources Control Board           | 07/01/1995 | 08/30/1995 | 09/26/1995  |
| CA | UIC                 | UIC Listing                                                  | Deaprtment of Conservation                    | 03/04/2024 | 03/05/2024 | 05/28/2024  |
| CA | WASTEWATER PITS     | Oil Wastewater Pits Listing                                  | RWQCB, Central Valley Region                  | 02/11/2021 | 07/01/2021 | 09/29/2021  |
| CA | WDS                 | Waste Discharge System                                       | State Water Resources Control Board           | 06/19/2007 | 06/20/2007 | 06/29/2007  |
| CA | WIP                 | Well Investigation Program Case List                         | Los Angeles Water Quality Control Board       | 07/03/2009 | 07/21/2009 | 08/03/2009  |
| CA | WMUDS/SWAT          | Waste Management Unit Database                               | State Water Resources Control Board           | 04/01/2000 | 04/10/2000 | 05/10/2000  |
| US | UXO                 | Unexploded Ordnance Sites                                    | Department of Defense                         | 09/06/2023 | 09/13/2023 | 12/11/2023  |
| CA | MILITARY PRIV SITES | Military Privatized Sites (GEOTRACKER)                       | State Water Resources Control Board           | 03/04/2024 | 03/05/2024 | 05/24/2024  |
| CA | NON-CASE INFO       | Non-Case Information Sites (GEOTRACKER)                      | State Water Resources Control Board           | 03/04/2024 | 03/05/2024 | 05/24/2024  |
| CA | OTHER OIL GAS       | Other Oil & Gas Projects Sites (GEOTRACKER)                  | State Water Resources Control Board           | 03/04/2024 | 03/05/2024 | 05/24/2024  |
| CA | PROD WATER PONDS    | Produced Water Ponds Sites (GEOTRACKER)                      | State Water Resources Control Board           | 03/04/2024 | 03/05/2024 | 05/24/2024  |
| CA | PROJECT             | Project Sites (GEOTRACKER)                                   | State Water Resources Control Board           | 03/04/2024 | 03/05/2024 | 05/24/2024  |
| CA | SAMPLING POINT      | Sampling Point ? Public Sites (GEOTRACKER)                   | State Water Resources Control Board           | 03/04/2024 | 03/05/2024 | 05/24/2024  |
| US | ECHO                | Enforcement & Compliance History Information                 | Environmental Protection Agency               | 12/17/2023 | 12/28/2023 | 03/04/2024  |
| US | PFAS ECHO           | Facilities in Industries that May Be Handling PFAS Listing   | Environmental Protection Agency               | 12/28/2023 | 12/28/2023 | 03/04/2024  |
| CA | WDR                 | Waste Discharge Requirements Listing                         | State Water Resources Control Board           | 03/04/2024 | 03/05/2024 | 05/28/2024  |
| CA | AQUEOUS FOAM        | Former Fire Training Facility Assessments Listing            | State Water Resources Control Board           | 03/04/2024 | 03/05/2024 | 05/28/2024  |
| CA | CHROME PLATING      | Chrome Plating Facilities Listing                            | State Water Resources Control Board           | 03/04/2024 | 03/05/2024 | 05/28/2024  |
| CA | CERS                | CalEPA Regulated Site Portal Data                            | California Environmental Protection Agency    | 01/16/2024 | 01/16/2024 | 04/03/2024  |

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

| St                            | Acronym              | Full Name                                                    | Government Agency                             | Gov Date   | Arvl. Date | Active Date |
|-------------------------------|----------------------|--------------------------------------------------------------|-----------------------------------------------|------------|------------|-------------|
| CA                            | CERS TANKS           | California Environmental Reporting System (CERS) Tanks       | California Environmental Protection Agency    | 01/16/2024 | 01/16/2024 | 04/03/2024  |
| US                            | BIOSOLIDS            | ICIS-NPDES Biosolids Facility Data                           | Environmental Protection Agency               | 12/31/2023 | 01/03/2024 | 01/16/2024  |
| US                            | PFAS TSCA            | PFAS Manufacture and Imports Information                     | Environmental Protection Agency               | 12/28/2023 | 12/28/2023 | 01/04/2024  |
| US                            | PFAS ATSDR           | PFAS Contamination Site Location Listing                     | Department of Health & Human Services         | 06/24/2020 | 03/17/2021 | 11/08/2022  |
| US                            | MINES MRDS           | Mineral Resources Data System                                | USGS                                          | 08/23/2022 | 11/22/2022 | 02/28/2023  |
| US                            | DOCKET HWC           | Hazardous Waste Compliance Docket Listing                    | Environmental Protection Agency               | 05/06/2021 | 05/21/2021 | 08/11/2021  |
| US                            | PFAS PT 139 AIRPORT  | All Certified Part 139 Airports PFAS Information Listing     | Environmental Protection Agency               | 12/28/2023 | 12/28/2023 | 03/04/2024  |
| US                            | PFAS WQP             | Ambient Environmental Sampling for PFAS                      | Environmental Protection Agency               | 12/28/2023 | 12/28/2023 | 03/04/2024  |
| US                            | PFAS FEDERAL SITES   | Federal Sites PFAS Information                               | Environmental Protection Agency               | 12/28/2023 | 12/28/2023 | 03/04/2024  |
| US                            | PFAS RCRA MANIFEST   | PFAS Transfers Identified In the RCRA Database Listing       | Environmental Protection Agency               | 12/28/2023 | 12/28/2023 | 01/04/2024  |
| US                            | PFAS ECHO FIRE TRAIN | Facilities in Industries that May Be Handling PFAS Listing   | Environmental Protection Agency               | 12/28/2023 | 12/28/2023 | 03/04/2024  |
| US                            | PFAS NPDES           | Clean Water Act Discharge Monitoring Information             | Environmental Protection Agency               | 12/28/2023 | 12/28/2023 | 03/04/2024  |
| US                            | PFAS NPL             | Superfund Sites with PFAS Detections Information             | Environmental Protection Agency               | 12/28/2023 | 12/28/2023 | 03/04/2024  |
| US                            | FUELS PROGRAM        | EPA Fuels Program Registered Listing                         | EPA                                           | 02/12/2024 | 02/13/2024 | 04/04/2024  |
| US                            | FEDERAL FACILITY     | Federal Facility Site Information listing                    | Environmental Protection Agency               | 12/20/2023 | 12/20/2023 | 01/24/2024  |
| CA                            | HWTS                 | Hazardous Waste Tracking System                              | Department of Toxic Substances Control        | 01/26/2024 | 01/30/2024 | 04/17/2024  |
| CA                            | CIWQS                | California Integrated Water Quality System                   | State Water Resources Control Board           | 02/26/2024 | 02/27/2024 | 05/14/2024  |
| US                            | UST FINDER           | UST Finder Database                                          | Environmental Protection Agency               | 06/08/2023 | 10/04/2023 | 01/18/2024  |
| US                            | UST FINDER RELEASE   | UST Finder Releases Database                                 | Environmental Protection Agency               | 06/08/2023 | 10/31/2023 | 01/18/2024  |
| CA                            | PFAS                 | PFAS Contamination Site Location Listing                     | State Water Resources Control Board           | 03/04/2024 | 03/06/2024 | 05/29/2024  |
| CA                            | WELL STIM PROJ       | Well Stimulation Project (GEOTRACKER)                        | State Water Resources Control Board           | 03/04/2024 | 03/05/2024 | 05/24/2024  |
| CA                            | UIC GEO              | Underground Injection Control Sites (GEOTRACKER)             | State Water Resource Control Board            | 03/04/2024 | 03/05/2024 | 05/24/2024  |
| US                            | PFAS TRIS            | List of PFAS Added to the TRI                                | Environmental Protection Agency               | 12/28/2023 | 12/28/2023 | 01/04/2024  |
| US                            | PCS                  | Permit Compliance System                                     | EPA, Office of Water                          | 12/16/2016 | 01/06/2017 | 03/10/2017  |
| US                            | AQUEOUS FOAM NRC     | Aqueous Foam Related Incidents Listing                       | Environmental Protection Agency               | 12/28/2023 | 12/28/2023 | 03/04/2024  |
| CA                            | CERS HAZ WASTE       | California Environmental Reporting System Hazardous Waste    | CalEPA                                        | 01/16/2024 | 01/16/2024 | 04/03/2024  |
| <b>HISTORICAL USE RECORDS</b> |                      |                                                              |                                               |            |            |             |
| US                            | EDR MGP              | EDR Proprietary Manufactured Gas Plants                      | EDR, Inc.                                     |            |            |             |
| US                            | EDR Hist Auto        | EDR Exclusive Historical Auto Stations                       | EDR, Inc.                                     |            |            |             |
| US                            | EDR Hist Cleaner     | EDR Exclusive Historical Cleaners                            | EDR, Inc.                                     |            |            |             |
| CA                            | RGA LF               | Recovered Government Archive Solid Waste Facilities List     | Department of Resources Recycling and Recover |            | 07/01/2013 | 01/13/2014  |
| CA                            | RGA LUST             | Recovered Government Archive Leaking Underground Storage Tan | State Water Resources Control Board           |            | 07/01/2013 | 12/30/2013  |

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

| St                    | Acronym                   | Full Name                                           | Government Agency                             | Gov Date   | Arvl. Date | Active Date |
|-----------------------|---------------------------|-----------------------------------------------------|-----------------------------------------------|------------|------------|-------------|
| <b>COUNTY RECORDS</b> |                           |                                                     |                                               |            |            |             |
| CA                    | CS ALAMEDA                | Contaminated Sites                                  | Alameda County Environmental Health Services  | 01/09/2019 | 01/11/2019 | 03/05/2019  |
| CA                    | UST ALAMEDA               | Underground Tanks                                   | Alameda County Environmental Health Services  | 12/26/2023 | 12/26/2023 | 03/19/2024  |
| CA                    | CUPA AMADOR               | CUPA Facility List                                  | Amador County Environmental Health            | 04/27/2023 | 04/27/2023 | 07/13/2023  |
| CA                    | CUPA BUTTE                | CUPA Facility Listing                               | Public Health Department                      | 04/21/2017 | 04/25/2017 | 08/09/2017  |
| CA                    | CUPA CALVERAS             | CUPA Facility Listing                               | Calveras County Environmental Health          | 12/18/2023 | 12/18/2023 | 03/13/2024  |
| CA                    | CUPA COLUSA               | CUPA Facility List                                  | Health & Human Services                       | 04/06/2020 | 04/23/2020 | 07/10/2020  |
| CA                    | SL CONTRA COSTA           | Site List                                           | Contra Costa Health Services Department       | 01/19/2024 | 01/24/2024 | 04/09/2024  |
| CA                    | CUPA DEL NORTE            | CUPA Facility List                                  | Del Norte County Environmental Health Divisio | 02/05/2024 | 02/08/2024 | 04/26/2024  |
| CA                    | CUPA EL DORADO            | CUPA Facility List                                  | El Dorado County Environmental Management Dep | 08/08/2022 | 08/09/2022 | 09/01/2022  |
| CA                    | CUPA FRESNO               | CUPA Resources List                                 | Dept. of Community Health                     | 06/28/2021 | 12/21/2021 | 03/03/2022  |
| CA                    | CUPA GLENN                | CUPA Facility List                                  | Glenn County Air Pollution Control District   | 01/22/2018 | 01/24/2018 | 03/14/2018  |
| CA                    | CUPA HUMBOLDT             | CUPA Facility List                                  | Humboldt County Environmental Health          | 08/12/2021 | 08/12/2021 | 11/08/2021  |
| CA                    | CUPA IMPERIAL             | CUPA Facility List                                  | San Diego Border Field Office                 | 01/17/2024 | 01/18/2024 | 04/03/2024  |
| CA                    | CUPA INYO                 | CUPA Facility List                                  | Inyo County Environmental Health Services     | 04/02/2018 | 04/03/2018 | 06/14/2018  |
| CA                    | CUPA KERN                 | CUPA Facility List                                  | Kern County Public Health                     | 10/30/2023 | 11/01/2023 | 01/23/2024  |
| CA                    | UST KERN                  | Underground Storage Tank Sites & Tank Listing       | Kern County Environment Health Services Depar | 04/25/2024 | 05/01/2024 | 05/08/2024  |
| CA                    | CUPA KINGS                | CUPA Facility List                                  | Kings County Department of Public Health      | 12/03/2020 | 01/26/2021 | 04/14/2021  |
| CA                    | CUPA LAKE                 | CUPA Facility List                                  | Lake County Environmental Health              | 02/05/2024 | 02/08/2024 | 04/26/2024  |
| CA                    | CUPA LASSEN               | CUPA Facility List                                  | Lassen County Environmental Health            | 07/31/2020 | 08/21/2020 | 11/09/2020  |
| CA                    | AOCONCERN                 | Key Areas of Concerns in Los Angeles County         |                                               | 03/30/2009 | 03/31/2009 | 10/23/2009  |
| CA                    | HMS LOS ANGELES           | HMS: Street Number List                             | Department of Public Works                    | 01/16/2024 | 01/18/2024 | 03/26/2024  |
| CA                    | LF LOS ANGELES            | List of Solid Waste Facilities                      | La County Department of Public Works          | 01/09/2024 | 01/10/2024 | 03/27/2024  |
| CA                    | LF LOS ANGELES CITY       | City of Los Angeles Landfills                       | Engineering & Construction Division           | 12/31/2022 | 01/12/2023 | 03/29/2023  |
| CA                    | LOS ANGELES AST           | Active & Inactive AST Inventory                     | Los Angeles Fire Department                   | 06/01/2019 | 06/25/2019 | 08/22/2019  |
| CA                    | LOS ANGELES CO LF METHANE | Methane Producing Landfills                         | Los Angeles County Department of Public Works | 04/13/2023 | 07/13/2023 | 09/27/2023  |
| CA                    | LOS ANGELES HM            | Active & Inactive Hazardous Materials Inventory     | Los Angeles Fire Department                   | 12/01/2023 | 12/13/2023 | 12/14/2023  |
| CA                    | LOS ANGELES UST           | Active & Inactive UST Inventory                     | Los Angeles Fire Department                   | 12/01/2023 | 12/13/2023 | 03/07/2024  |
| CA                    | SITE MIT LOS ANGELES      | Site Mitigation LA County List                      | Community Health Services                     | 07/11/2023 | 10/17/2023 | 01/09/2024  |
| CA                    | UST EL SEGUNDO            | City of El Segundo Underground Storage Tank         | City of El Segundo Fire Department            | 01/21/2017 | 04/19/2017 | 05/10/2017  |
| CA                    | UST LONG BEACH            | City of Long Beach Underground Storage Tank         | City of Long Beach Fire Department            | 04/22/2019 | 04/23/2019 | 06/27/2019  |
| CA                    | UST TORRANCE              | City of Torrance Underground Storage Tank           | City of Torrance Fire Department              | 04/12/2023 | 05/02/2023 | 06/13/2023  |
| CA                    | CUPA MADERA               | CUPA Facility List                                  | Madera County Environmental Health            | 08/10/2020 | 08/12/2020 | 10/23/2020  |
| CA                    | UST MARIN                 | Underground Storage Tank Sites                      | Public Works Department Waste Management      | 09/26/2018 | 10/04/2018 | 11/02/2018  |
| CA                    | UST MENDOCINO             | Mendocino County UST Database                       | Department of Public Health                   | 09/22/2021 | 11/18/2021 | 11/22/2021  |
| CA                    | CUPA MERCED               | CUPA Facility List                                  | Merced County Environmental Health            | 11/15/2023 | 11/20/2023 | 02/15/2024  |
| CA                    | CUPA MONO                 | CUPA Facility List                                  | Mono County Health Department                 | 02/22/2021 | 03/02/2021 | 05/19/2021  |
| CA                    | CUPA MONTEREY             | CUPA Facility Listing                               | Monterey County Health Department             | 10/04/2021 | 10/06/2021 | 12/29/2021  |
| CA                    | LUST NAPA                 | Sites With Reported Contamination                   | Napa County Department of Environmental Manag | 01/09/2017 | 01/11/2017 | 03/02/2017  |
| CA                    | UST NAPA                  | Closed and Operating Underground Storage Tank Sites | Napa County Department of Environmental Manag | 09/05/2019 | 09/09/2019 | 10/31/2019  |
| CA                    | CUPA NEVADA               | CUPA Facility List                                  | Community Development Agency                  | 10/31/2023 | 11/03/2023 | 01/23/2024  |
| CA                    | IND_SITE ORANGE           | List of Industrial Site Cleanups Orange County      | Health Care Agency                            | 02/02/2024 | 03/13/2024 | 06/04/2024  |
| CA                    | LUST ORANGE               | List of Underground Storage Tank Cleanups           | Health Care Agency                            | 02/22/2024 | 03/13/2024 | 06/04/2024  |
| CA                    | UST ORANGE                | List of Underground Storage Tank Facilities         | Health Care Agency                            | 02/22/2024 | 03/13/2024 | 06/04/2024  |
| CA                    | MS PLACER                 | Master List of Facilities                           | Placer County Health and Human Services       | 02/28/2024 | 02/28/2024 | 05/16/2024  |
| CA                    | CUPA PLUMAS               | CUPA Facility List                                  | Plumas County Environmental Health            | 03/31/2019 | 04/23/2019 | 06/26/2019  |

## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

| St | Acronym                | Full Name                                                    | Government Agency                              | Gov Date   | Arvl Date  | Active Date |
|----|------------------------|--------------------------------------------------------------|------------------------------------------------|------------|------------|-------------|
| CA | LUST RIVERSIDE         | Listing of Underground Tank Cleanup Sites                    | Department of Environmental Health             | 01/04/2024 | 01/04/2024 | 03/29/2024  |
| CA | UST RIVERSIDE          | Underground Storage Tank Tank List                           | Department of Environmental Health             | 01/04/2024 | 01/04/2024 | 03/21/2024  |
| CA | CS SACRAMENTO          | Toxic Site Clean-Up List                                     | Sacramento County Environmental Management     | 11/07/2022 | 12/21/2022 | 03/16/2023  |
| CA | ML SACRAMENTO          | Master Hazardous Materials Facility List                     | Sacramento County Environmental Management     | 11/07/2022 | 12/09/2022 | 03/01/2023  |
| CA | CUPA SAN BENITO        | CUPA Facility List                                           | San Benito County Environmental Health         | 01/17/2024 | 01/18/2024 | 01/26/2024  |
| CA | PERMITS SAN BERNARDINO | Hazardous Material Permits                                   | San Bernardino County Fire Department Hazardo  | 02/13/2024 | 02/14/2024 | 05/02/2024  |
| CA | HMMD SAN DIEGO         | Hazardous Materials Management Division Database             | Hazardous Materials Management Division        | 05/16/2024 | 05/22/2024 | 05/24/2024  |
| CA | LF SAN DIEGO           | Solid Waste Facilities                                       | Department of Health Services                  | 10/01/2023 | 01/31/2024 | 04/17/2024  |
| CA | SAN DIEGO CO LOP       | Local Oversight Program Listing                              | Department of Environmental Health             | 07/22/2021 | 10/19/2021 | 01/13/2022  |
| CA | SAN DIEGO CO SAM       | Environmental Case Listing                                   | San Diego County Department of Environmental   | 03/23/2010 | 06/15/2010 | 07/09/2010  |
| CA | CUPA SAN FRANCISCO CO  | CUPA Facility Listing                                        | San Francisco County Department of Environmen  | 02/01/2024 | 02/01/2024 | 04/24/2024  |
| CA | LUST SAN FRANCISCO     | Local Oversight Facilities                                   | Department Of Public Health San Francisco Cou  | 09/19/2008 | 09/19/2008 | 09/29/2008  |
| CA | UST SAN FRANCISCO      | Underground Storage Tank Information                         | Department of Public Health                    | 02/01/2024 | 02/01/2024 | 04/24/2024  |
| CA | SAN FRANCISCO MAHER    | Maier Ordinance Property Listing                             | San Francisco Planning                         | 01/15/2024 | 01/18/2024 | 04/05/2024  |
| CA | UST SAN JOAQUIN        | San Joaquin Co. UST                                          | Environmental Health Department                | 06/22/2018 | 06/26/2018 | 07/11/2018  |
| CA | CUPA SAN LUIS OBISPO   | CUPA Facility List                                           | San Luis Obispo County Public Health Departme  | 02/14/2024 | 02/14/2024 | 05/02/2024  |
| CA | BI SAN MATEO           | Business Inventory                                           | San Mateo County Environmental Health Service  | 02/20/2020 | 02/20/2020 | 04/24/2020  |
| CA | LUST SAN MATEO         | Fuel Leak List                                               | San Mateo County Environmental Health Service  | 03/29/2019 | 03/29/2019 | 05/29/2019  |
| CA | CUPA SANTA BARBARA     | CUPA Facility Listing                                        | Santa Barbara County Public Health Department  | 09/08/2011 | 09/09/2011 | 10/07/2011  |
| CA | CUPA SANTA CLARA       | Cupa Facility List                                           | Department of Environmental Health             | 02/21/2024 | 02/22/2024 | 05/08/2024  |
| CA | HIST LUST SANTA CLARA  | HIST LUST - Fuel Leak Site Activity Report                   | Santa Clara Valley Water District              | 03/29/2005 | 03/30/2005 | 04/21/2005  |
| CA | LUST SANTA CLARA       | LOP Listing                                                  | Department of Environmental Health             | 03/03/2014 | 03/05/2014 | 03/18/2014  |
| CA | CUPA SANTA CRUZ        | CUPA Facility List                                           | Santa Cruz County Environmental Health         | 01/21/2017 | 02/22/2017 | 05/23/2017  |
| CA | SITE MIT SANTA CRUZ    | Site Mitigation Santa Cruz County List                       | Santa Cruz Environmental Health Services       | 12/03/2018 | 06/23/2023 | 07/13/2023  |
| CA | CUPA SHASTA            | CUPA Facility List                                           | Shasta County Department of Resource Manageme  | 06/15/2017 | 06/19/2017 | 08/09/2017  |
| CA | LUST SOLANO            | Leaking Underground Storage Tanks                            | Solano County Department of Environmental Man  | 06/04/2019 | 06/06/2019 | 08/13/2019  |
| CA | UST SOLANO             | Underground Storage Tanks                                    | Solano County Department of Environmental Man  | 09/15/2021 | 09/16/2021 | 12/09/2021  |
| CA | CUPA SONOMA            | Cupa Facility List                                           | County of Sonoma Fire & Emergency Services De  | 07/02/2021 | 07/06/2021 | 07/14/2021  |
| CA | LUST SONOMA            | Leaking Underground Storage Tank Sites                       | Department of Health Services                  | 06/30/2021 | 06/30/2021 | 09/24/2021  |
| CA | CUPA STANISLAUS        | CUPA Facility List                                           | Stanislaus County Department of Ennnvironmenta | 02/08/2022 | 02/10/2022 | 05/04/2022  |
| CA | UST SUTTER             | Underground Storage Tanks                                    | Sutter County Environmental Health Services    | 08/03/2023 | 08/24/2023 | 09/12/2023  |
| CA | CUPA TEHAMA            | CUPA Facility List                                           | Tehama County Department of Environmental Hea  | 12/05/2023 | 02/01/2024 | 02/28/2024  |
| CA | CUPA TRINITY           | CUPA Facility List                                           | Department of Toxic Substances Control         | 01/17/2024 | 01/18/2024 | 04/03/2024  |
| CA | CUPA TULARE            | CUPA Facility List                                           | Tulare County Environmental Health Services D  | 10/07/2022 | 10/07/2022 | 12/21/2022  |
| CA | CUPA TUOLUMNE          | CUPA Facility List                                           | Division of Environmental Health               | 04/23/2018 | 04/25/2018 | 06/25/2018  |
| CA | BWT VENTURA            | Business Plan, Hazardous Waste Producers, and Operating Unde | Ventura County Environmental Health Division   | 12/26/2023 | 01/24/2024 | 04/08/2024  |
| CA | LF VENTURA             | Inventory of Illegal Abandoned and Inactive Sites            | Environmental Health Division                  | 12/01/2011 | 12/01/2011 | 01/19/2012  |
| CA | LUST VENTURA           | Listing of Underground Tank Cleanup Sites                    | Environmental Health Division                  | 05/29/2008 | 06/24/2008 | 07/31/2008  |
| CA | MED WASTE VENTURA      | Medical Waste Program List                                   | Ventura County Resource Management Agency      | 12/26/2023 | 01/23/2024 | 04/09/2024  |
| CA | UST VENTURA            | Underground Tank Closed Sites List                           | Environmental Health Division                  | 02/27/2024 | 03/05/2024 | 05/29/2024  |
| CA | UST YOLO               | Underground Storage Tank Comprehensive Facility Report       | Yolo County Department of Health               | 12/18/2023 | 12/26/2023 | 03/19/2024  |
| CA | CUPA YUBA              | CUPA Facility List                                           | Yuba County Environmental Health Department    | 01/22/2024 | 01/23/2024 | 04/08/2024  |



GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St    Acronym                                      Full Name                                      Government Agency                                      Gov Date    Arvl. Date    Active Date

STREET AND ADDRESS INFORMATION

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# **APPENDIX G**

## **LABORATORY TEST RESULTS**



**Orange Coast Analytical, Inc.**

3002 Dow, Suite 532, Tustin, CA 92780 (714) 832-0064 Fax (714) 832-0067  
4620 E. Elwood, Suite 4, Phoenix, AZ 85040 (480) 736-0960 Fax (480) 736-0970

**LABORATORY REPORT FORM**

ORANGE COAST ANALYTICAL, INC.

3002 Dow Suite 532 Tustin, CA 92780

(714) 832-0064

Laboratory Certification (ELAP) No.:2576

Expiration Date: 2025

Los Angeles County Sanitation District Lab ID# 10206

Laboratory Director's Name:

Mark Noorani

Client: GeoTek, Inc.

Laboratory Reference: GTK 28902

Project Name: K Hovnanian California Region

Project Number: 3951-CR

Date Received: 6/11/2024

Date Reported: 6/20/2024

Chain of Custody Received: ☒

Analytical Method: 8081A, 6010B,

Mark Noorani, Laboratory Director

Mr Kyle Mchargue  
GeoTek, Inc.  
1548 N. Maple St  
Corona, CA, 92880

Lab Reference # GTK 28902  
Project Name: K Hovnanian California Region  
Project #: 3951-CR

### ***Case Narrative***

#### **Sample Receipt:**

All samples on the Chain of Custody were received by OCA at 6°C, on ice.  
Samples in plastic bag.

#### **Holding Times:**

All samples were analyzed within required holding times unless otherwise noted in the data qualifier section of the report.

#### **Analytical Methods:**

Sample analysis was performed following the analytical methods listed on the cover page.

#### **Data Qualifiers:**

Within this report, data qualifiers may have been assigned to clarify deviations in common laboratory procedures or any divergence from laboratory QA/QC criteria. If a data qualifier has been used, it will appear in the back of the report along with its description. All method QA/QC criteria have been met unless otherwise noted in the data qualifier section.

#### **Definition of Terms:**

The definitions of common terms and acronyms used in the report have been placed at the back of the report to assist data users.

#### **Comments:**

None

Mr Kyle Mchargue  
GeoTek, Inc.  
1548 N. Maple St  
Corona, CA, 92880

Lab Reference # GTK 28902  
Project Name: K Hovnanian California Region  
Project #: 3951-CR

***Client Sample Summary***

| Client Sample ID | Lab Sample Number | Date Received | Date Sampled | Matrix |
|------------------|-------------------|---------------|--------------|--------|
| #1               | 28902-001         | 6/11/2024     | 6/10/2024    | Soil   |
| #2               | 28902-002         | 6/11/2024     | 6/10/2024    | Soil   |
| #3               | 28902-003         | 6/11/2024     | 6/10/2024    | Soil   |
| #4               | 28902-004         | 6/11/2024     | 6/10/2024    | Soil   |
| #5               | 28902-005         | 6/11/2024     | 6/10/2024    | Soil   |
| #6               | 28902-006         | 6/11/2024     | 6/10/2024    | Soil   |
| #7               | 28902-007         | 6/11/2024     | 6/10/2024    | Soil   |
| #8               | 28902-008         | 6/11/2024     | 6/10/2024    | Soil   |
| #9               | 28902-009         | 6/11/2024     | 6/10/2024    | Soil   |
| #10              | 28902-010         | 6/11/2024     | 6/10/2024    | Soil   |
| #11              | 28902-011         | 6/11/2024     | 6/10/2024    | Soil   |
| #12              | 28902-012         | 6/11/2024     | 6/10/2024    | Soil   |

Mr Kyle Mchargue  
GeoTek, Inc.  
1548 N. Maple St  
Corona, CA, 92880

Lab Reference # GTK 28902  
Project Name: K Hovnanian California Region  
Project #: 3951-CR

**Organochlorine Pesticides (EPA 8081A)**

| Client Sample ID    | Lab Sample Number | Date Received      | Date Sampled       | Date Extracted     | Date Analyzed      | Matrix |
|---------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------|
| #1                  | 28902-001         | 6/11/2024<br>11:55 | 6/10/2024<br>12:00 | 6/11/2024<br>16:00 | 6/13/2024<br>12:03 | Soil   |
| <u>ANALYTE</u>      | <u>CAS #</u>      | <u>µg/kg</u>       |                    | <u>Surrogate:</u>  | <u>% RC*</u>       |        |
| Aldrin              | 309-00-2          | <8.0               |                    | Decachlorobiphenyl | 107                |        |
| alpha-BHC           | 319-84-6          | <20                |                    |                    |                    |        |
| beta-BHC            | 319-85-7          | <20                |                    |                    |                    |        |
| gamma-BHC (Lindane) | 58-89-9           | <20                |                    |                    |                    |        |
| delta-BHC           | 319-86-8          | <40                |                    |                    |                    |        |
| Chlordane           | 57-74-9           | <120               |                    |                    |                    |        |
| 4,4'-DDD            | 72-54-8           | <40                |                    |                    |                    |        |
| 4,4'-DDE            | 72-55-9           | 35                 |                    |                    |                    |        |
| 4,4'-DDT            | 50-29-3           | <40                |                    |                    |                    |        |
| Dieldrin            | 60-57-1           | <8.0               |                    |                    |                    |        |
| Endosulfan I        | 959-98-8          | <40                |                    |                    |                    |        |
| Endosulfan II       | 33213-65-9        | <20                |                    |                    |                    |        |
| Endosulfan sulfate  | 1031-07-8         | <40                |                    |                    |                    |        |
| Endrin              | 72-20-8           | <40                |                    |                    |                    |        |
| Endrin aldehyde     | 7421-93-4         | <40                |                    |                    |                    |        |
| Endrin ketone       | 53494-70-5        | <20                |                    |                    |                    |        |
| Heptachlor          | 76-44-8           | <8.0               |                    |                    |                    |        |
| Heptachlor epoxide  | 1024-57-3         | <20                |                    |                    |                    |        |
| Methoxychlor        | 72-43-5           | <40                |                    |                    |                    |        |
| Toxaphene           | 8001-35-2         | <160               |                    |                    |                    |        |

\* Acceptable Recovery: 38-133 %

Dilution Factor: 4

Data Qualifiers: D1,

Mr Kyle Mchargue  
GeoTek, Inc.  
1548 N. Maple St  
Corona, CA, 92880

Lab Reference # GTK 28902  
Project Name: K Hovnanian California Region  
Project #: 3951-CR

**Organochlorine Pesticides (EPA 8081A)**

| Client Sample ID | Lab Sample Number | Date Received      | Date Sampled       | Date Extracted     | Date Analyzed      | Matrix |
|------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------|
| #2               | 28902-002         | 6/11/2024<br>11:55 | 6/10/2024<br>12:00 | 6/11/2024<br>16:00 | 6/13/2024<br>12:17 | Soil   |

| <u>ANALYTE</u>      | <u>CAS #</u> | <u>µg/kg</u> |
|---------------------|--------------|--------------|
| Aldrin              | 309-00-2     | <8.0         |
| alpha-BHC           | 319-84-6     | <20          |
| beta-BHC            | 319-85-7     | <20          |
| gamma-BHC (Lindane) | 58-89-9      | <20          |
| delta-BHC           | 319-86-8     | <40          |
| Chlordane           | 57-74-9      | <120         |
| 4,4'-DDD            | 72-54-8      | <40          |
| 4,4'-DDE            | 72-55-9      | <20          |
| 4,4'-DDT            | 50-29-3      | <40          |
| Dieldrin            | 60-57-1      | <8.0         |
| Endosulfan I        | 959-98-8     | <40          |
| Endosulfan II       | 33213-65-9   | <20          |
| Endosulfan sulfate  | 1031-07-8    | <40          |
| Endrin              | 72-20-8      | <40          |
| Endrin aldehyde     | 7421-93-4    | <40          |
| Endrin ketone       | 53494-70-5   | <20          |
| Heptachlor          | 76-44-8      | <8.0         |
| Heptachlor epoxide  | 1024-57-3    | <20          |
| Methoxychlor        | 72-43-5      | <40          |
| Toxaphene           | 8001-35-2    | <160         |

Surrogate:      % RC\*  
Decachlorobiphenyl    106  
  
\* Acceptable Recovery: 38-133 %  
  
Dilution Factor: 4  
Data Qualifiers: D1,

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Lab Reference # GTK 28902  
Project Name: K Hovnanian California Region  
Project #: 3951-CR

**Organochlorine Pesticides (EPA 8081A)**

| Client Sample ID    | Lab Sample Number | Date Received      | Date Sampled       | Date Extracted     | Date Analyzed      | Matrix |
|---------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------|
| #3                  | 28902-003         | 6/11/2024<br>11:55 | 6/10/2024<br>12:00 | 6/11/2024<br>16:00 | 6/13/2024<br>12:32 | Soil   |
| <u>ANALYTE</u>      | <u>CAS #</u>      | <u>µg/kg</u>       |                    | <u>Surrogate:</u>  | <u>% RC*</u>       |        |
| Aldrin              | 309-00-2          | <8.0               |                    | Decachlorobiphenyl | 101                |        |
| alpha-BHC           | 319-84-6          | <20                |                    |                    |                    |        |
| beta-BHC            | 319-85-7          | <20                |                    |                    |                    |        |
| gamma-BHC (Lindane) | 58-89-9           | <20                |                    |                    |                    |        |
| delta-BHC           | 319-86-8          | <40                |                    |                    |                    |        |
| Chlordane           | 57-74-9           | <120               |                    |                    |                    |        |
| 4,4'-DDD            | 72-54-8           | <40                |                    |                    |                    |        |
| 4,4'-DDE            | 72-55-9           | <20                |                    |                    |                    |        |
| 4,4'-DDT            | 50-29-3           | <40                |                    |                    |                    |        |
| Dieldrin            | 60-57-1           | <8.0               |                    |                    |                    |        |
| Endosulfan I        | 959-98-8          | <40                |                    |                    |                    |        |
| Endosulfan II       | 33213-65-9        | <20                |                    |                    |                    |        |
| Endosulfan sulfate  | 1031-07-8         | <40                |                    |                    |                    |        |
| Endrin              | 72-20-8           | <40                |                    |                    |                    |        |
| Endrin aldehyde     | 7421-93-4         | <40                |                    |                    |                    |        |
| Endrin ketone       | 53494-70-5        | <20                |                    |                    |                    |        |
| Heptachlor          | 76-44-8           | <8.0               |                    |                    |                    |        |
| Heptachlor epoxide  | 1024-57-3         | <20                |                    |                    |                    |        |
| Methoxychlor        | 72-43-5           | <40                |                    |                    |                    |        |
| Toxaphene           | 8001-35-2         | <160               |                    |                    |                    |        |

\* Acceptable Recovery: 38-133 %

Dilution Factor: 4

Data Qualifiers: D1,



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Project #: 3951-CR

**Organochlorine Pesticides (EPA 8081A)**

| Client Sample ID    | Lab Sample Number | Date Received      | Date Sampled                    | Date Extracted     | Date Analyzed      | Matrix |
|---------------------|-------------------|--------------------|---------------------------------|--------------------|--------------------|--------|
| #4                  | 28902-004         | 6/11/2024<br>11:55 | 6/10/2024<br>12:00              | 6/11/2024<br>16:00 | 6/13/2024<br>12:47 | Soil   |
| <u>ANALYTE</u>      | <u>CAS #</u>      | <u>µg/kg</u>       | <u>Surrogate:</u>               |                    | <u>% RC*</u>       |        |
| Aldrin              | 309-00-2          | <8.0               | Decachlorobiphenyl              |                    | 104                |        |
| alpha-BHC           | 319-84-6          | <20                | * Acceptable Recovery: 38-133 % |                    |                    |        |
| beta-BHC            | 319-85-7          | <20                |                                 |                    |                    |        |
| gamma-BHC (Lindane) | 58-89-9           | <20                | <u>Dilution Factor:</u> 4       |                    |                    |        |
| delta-BHC           | 319-86-8          | <40                |                                 |                    |                    |        |
| Chlordane           | 57-74-9           | <120               | <u>Data Qualifiers:</u> D1,     |                    |                    |        |
| 4,4'-DDD            | 72-54-8           | <40                |                                 |                    |                    |        |
| 4,4'-DDE            | 72-55-9           | 35                 |                                 |                    |                    |        |
| 4,4'-DDT            | 50-29-3           | <40                |                                 |                    |                    |        |
| Dieldrin            | 60-57-1           | <8.0               |                                 |                    |                    |        |
| Endosulfan I        | 959-98-8          | <40                |                                 |                    |                    |        |
| Endosulfan II       | 33213-65-9        | <20                |                                 |                    |                    |        |
| Endosulfan sulfate  | 1031-07-8         | <40                |                                 |                    |                    |        |
| Endrin              | 72-20-8           | <40                |                                 |                    |                    |        |
| Endrin aldehyde     | 7421-93-4         | <40                |                                 |                    |                    |        |
| Endrin ketone       | 53494-70-5        | <20                |                                 |                    |                    |        |
| Heptachlor          | 76-44-8           | <8.0               |                                 |                    |                    |        |
| Heptachlor epoxide  | 1024-57-3         | <20                |                                 |                    |                    |        |
| Methoxychlor        | 72-43-5           | <40                |                                 |                    |                    |        |
| Toxaphene           | 8001-35-2         | <160               |                                 |                    |                    |        |

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Project #: 3951-CR

**Organochlorine Pesticides (EPA 8081A)**

| Client Sample ID | Lab Sample Number | Date Received      | Date Sampled       | Date Extracted     | Date Analyzed      | Matrix |
|------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------|
| #5               | 28902-005         | 6/11/2024<br>11:55 | 6/10/2024<br>12:00 | 6/11/2024<br>16:00 | 6/13/2024<br>13:01 | Soil   |

| <u>ANALYTE</u>      | <u>CAS #</u> | <u>µg/kg</u> |
|---------------------|--------------|--------------|
| Aldrin              | 309-00-2     | <8.0         |
| alpha-BHC           | 319-84-6     | <20          |
| beta-BHC            | 319-85-7     | <20          |
| gamma-BHC (Lindane) | 58-89-9      | <20          |
| delta-BHC           | 319-86-8     | <40          |
| Chlordane           | 57-74-9      | <120         |
| 4,4'-DDD            | 72-54-8      | <40          |
| 4,4'-DDE            | 72-55-9      | <20          |
| 4,4'-DDT            | 50-29-3      | <40          |
| Dieldrin            | 60-57-1      | <8.0         |
| Endosulfan I        | 959-98-8     | <40          |
| Endosulfan II       | 33213-65-9   | <20          |
| Endosulfan sulfate  | 1031-07-8    | <40          |
| Endrin              | 72-20-8      | <40          |
| Endrin aldehyde     | 7421-93-4    | <40          |
| Endrin ketone       | 53494-70-5   | <20          |
| Heptachlor          | 76-44-8      | <8.0         |
| Heptachlor epoxide  | 1024-57-3    | <20          |
| Methoxychlor        | 72-43-5      | <40          |
| Toxaphene           | 8001-35-2    | <160         |

Surrogate:                      % RC\*  
Decachlorobiphenyl      108  
  
\* Acceptable Recovery: 38-133 %  
  
Dilution Factor: 4  
Data Qualifiers: D1,

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Lab Reference # GTK 28902  
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Project #: 3951-CR

**Organochlorine Pesticides (EPA 8081A)**

| Client Sample ID    | Lab Sample Number | Date Received      | Date Sampled       | Date Extracted     | Date Analyzed      | Matrix |
|---------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------|
| #6                  | 28902-006         | 6/11/2024<br>11:55 | 6/10/2024<br>12:00 | 6/11/2024<br>16:00 | 6/13/2024<br>13:16 | Soil   |
| <u>ANALYTE</u>      | <u>CAS #</u>      | <u>µg/kg</u>       |                    | <u>Surrogate:</u>  | <u>% RC*</u>       |        |
| Aldrin              | 309-00-2          | <8.0               |                    | Decachlorobiphenyl | 105                |        |
| alpha-BHC           | 319-84-6          | <20                |                    |                    |                    |        |
| beta-BHC            | 319-85-7          | <20                |                    |                    |                    |        |
| gamma-BHC (Lindane) | 58-89-9           | <20                |                    |                    |                    |        |
| delta-BHC           | 319-86-8          | <40                |                    |                    |                    |        |
| Chlordane           | 57-74-9           | <120               |                    |                    |                    |        |
| 4,4'-DDD            | 72-54-8           | <40                |                    |                    |                    |        |
| 4,4'-DDE            | 72-55-9           | 38                 |                    |                    |                    |        |
| 4,4'-DDT            | 50-29-3           | <40                |                    |                    |                    |        |
| Dieldrin            | 60-57-1           | <8.0               |                    |                    |                    |        |
| Endosulfan I        | 959-98-8          | <40                |                    |                    |                    |        |
| Endosulfan II       | 33213-65-9        | <20                |                    |                    |                    |        |
| Endosulfan sulfate  | 1031-07-8         | <40                |                    |                    |                    |        |
| Endrin              | 72-20-8           | <40                |                    |                    |                    |        |
| Endrin aldehyde     | 7421-93-4         | <40                |                    |                    |                    |        |
| Endrin ketone       | 53494-70-5        | <20                |                    |                    |                    |        |
| Heptachlor          | 76-44-8           | <8.0               |                    |                    |                    |        |
| Heptachlor epoxide  | 1024-57-3         | <20                |                    |                    |                    |        |
| Methoxychlor        | 72-43-5           | <40                |                    |                    |                    |        |
| Toxaphene           | 8001-35-2         | <160               |                    |                    |                    |        |

\* Acceptable Recovery: 38-133 %

Dilution Factor: 4

Data Qualifiers: D1,

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Project Name: K Hovnanian California Region  
Project #: 3951-CR

**Organochlorine Pesticides (EPA 8081A)**

| Client Sample ID    | Lab Sample Number | Date Received      | Date Sampled       | Date Extracted     | Date Analyzed      | Matrix |
|---------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------|
| #7                  | 28902-007         | 6/11/2024<br>11:55 | 6/10/2024<br>12:00 | 6/11/2024<br>16:00 | 6/13/2024<br>13:30 | Soil   |
| <u>ANALYTE</u>      | <u>CAS #</u>      | <u>µg/kg</u>       |                    | <u>Surrogate:</u>  | <u>% RC*</u>       |        |
| Aldrin              | 309-00-2          | <8.0               |                    | Decachlorobiphenyl | 102                |        |
| alpha-BHC           | 319-84-6          | <20                |                    |                    |                    |        |
| beta-BHC            | 319-85-7          | <20                |                    |                    |                    |        |
| gamma-BHC (Lindane) | 58-89-9           | <20                |                    |                    |                    |        |
| delta-BHC           | 319-86-8          | <40                |                    |                    |                    |        |
| Chlordane           | 57-74-9           | <120               |                    |                    |                    |        |
| 4,4'-DDD            | 72-54-8           | <40                |                    |                    |                    |        |
| 4,4'-DDE            | 72-55-9           | 43                 |                    |                    |                    |        |
| 4,4'-DDT            | 50-29-3           | <40                |                    |                    |                    |        |
| Dieldrin            | 60-57-1           | <8.0               |                    |                    |                    |        |
| Endosulfan I        | 959-98-8          | <40                |                    |                    |                    |        |
| Endosulfan II       | 33213-65-9        | <20                |                    |                    |                    |        |
| Endosulfan sulfate  | 1031-07-8         | <40                |                    |                    |                    |        |
| Endrin              | 72-20-8           | <40                |                    |                    |                    |        |
| Endrin aldehyde     | 7421-93-4         | <40                |                    |                    |                    |        |
| Endrin ketone       | 53494-70-5        | <20                |                    |                    |                    |        |
| Heptachlor          | 76-44-8           | <8.0               |                    |                    |                    |        |
| Heptachlor epoxide  | 1024-57-3         | <20                |                    |                    |                    |        |
| Methoxychlor        | 72-43-5           | <40                |                    |                    |                    |        |
| Toxaphene           | 8001-35-2         | <160               |                    |                    |                    |        |

\* Acceptable Recovery: 38-133 %

Dilution Factor: 4

Data Qualifiers: D1,

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Lab Reference # GTK 28902  
Project Name: K Hovnanian California Region  
Project #: 3951-CR

**Organochlorine Pesticides (EPA 8081A)**

| Client Sample ID    | Lab Sample Number | Date Received      | Date Sampled                    | Date Extracted     | Date Analyzed      | Matrix |
|---------------------|-------------------|--------------------|---------------------------------|--------------------|--------------------|--------|
| #8                  | 28902-008         | 6/11/2024<br>11:55 | 6/10/2024<br>12:00              | 6/13/2024<br>16:00 | 6/17/2024<br>14:31 | Soil   |
| <u>ANALYTE</u>      | <u>CAS #</u>      | <u>µg/kg</u>       | <u>Surrogate:</u>               |                    | <u>% RC*</u>       |        |
| Aldrin              | 309-00-2          | <8.0               | Decachlorobiphenyl              |                    | 115                |        |
| alpha-BHC           | 319-84-6          | <20                | * Acceptable Recovery: 38-133 % |                    |                    |        |
| beta-BHC            | 319-85-7          | <20                |                                 |                    |                    |        |
| gamma-BHC (Lindane) | 58-89-9           | <20                | <u>Dilution Factor:</u> 4       |                    |                    |        |
| delta-BHC           | 319-86-8          | <40                |                                 |                    |                    |        |
| Chlordane           | 57-74-9           | <120               | <u>Data Qualifiers:</u> D1,     |                    |                    |        |
| 4,4'-DDD            | 72-54-8           | <40                |                                 |                    |                    |        |
| 4,4'-DDE            | 72-55-9           | 27                 |                                 |                    |                    |        |
| 4,4'-DDT            | 50-29-3           | <40                |                                 |                    |                    |        |
| Dieldrin            | 60-57-1           | <8.0               |                                 |                    |                    |        |
| Endosulfan I        | 959-98-8          | <40                |                                 |                    |                    |        |
| Endosulfan II       | 33213-65-9        | <20                |                                 |                    |                    |        |
| Endosulfan sulfate  | 1031-07-8         | <40                |                                 |                    |                    |        |
| Endrin              | 72-20-8           | <40                |                                 |                    |                    |        |
| Endrin aldehyde     | 7421-93-4         | <40                |                                 |                    |                    |        |
| Endrin ketone       | 53494-70-5        | <20                |                                 |                    |                    |        |
| Heptachlor          | 76-44-8           | <8.0               |                                 |                    |                    |        |
| Heptachlor epoxide  | 1024-57-3         | <20                |                                 |                    |                    |        |
| Methoxychlor        | 72-43-5           | <40                |                                 |                    |                    |        |
| Toxaphene           | 8001-35-2         | <160               |                                 |                    |                    |        |

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Project Name: K Hovnanian California Region  
Project #: 3951-CR

**Organochlorine Pesticides (EPA 8081A)**

| Client Sample ID    | Lab Sample Number | Date Received      | Date Sampled                    | Date Extracted     | Date Analyzed      | Matrix |
|---------------------|-------------------|--------------------|---------------------------------|--------------------|--------------------|--------|
| #9                  | 28902-009         | 6/11/2024<br>11:55 | 6/10/2024<br>12:00              | 6/13/2024<br>16:00 | 6/17/2024<br>14:46 | Soil   |
| <u>ANALYTE</u>      | <u>CAS #</u>      | <u>µg/kg</u>       | <u>Surrogate:</u>               |                    | <u>% RC*</u>       |        |
| Aldrin              | 309-00-2          | <8.0               | Decachlorobiphenyl              |                    | 91                 |        |
| alpha-BHC           | 319-84-6          | <20                | * Acceptable Recovery: 38-133 % |                    |                    |        |
| beta-BHC            | 319-85-7          | <20                |                                 |                    |                    |        |
| gamma-BHC (Lindane) | 58-89-9           | <20                | <u>Dilution Factor:</u> 4       |                    |                    |        |
| delta-BHC           | 319-86-8          | <40                |                                 |                    |                    |        |
| Chlordane           | 57-74-9           | <120               | <u>Data Qualifiers:</u> D1,     |                    |                    |        |
| 4,4'-DDD            | 72-54-8           | <40                |                                 |                    |                    |        |
| 4,4'-DDE            | 72-55-9           | <20                |                                 |                    |                    |        |
| 4,4'-DDT            | 50-29-3           | <40                |                                 |                    |                    |        |
| Dieldrin            | 60-57-1           | <8.0               |                                 |                    |                    |        |
| Endosulfan I        | 959-98-8          | <40                |                                 |                    |                    |        |
| Endosulfan II       | 33213-65-9        | <20                |                                 |                    |                    |        |
| Endosulfan sulfate  | 1031-07-8         | <40                |                                 |                    |                    |        |
| Endrin              | 72-20-8           | <40                |                                 |                    |                    |        |
| Endrin aldehyde     | 7421-93-4         | <40                |                                 |                    |                    |        |
| Endrin ketone       | 53494-70-5        | <20                |                                 |                    |                    |        |
| Heptachlor          | 76-44-8           | <8.0               |                                 |                    |                    |        |
| Heptachlor epoxide  | 1024-57-3         | <20                |                                 |                    |                    |        |
| Methoxychlor        | 72-43-5           | <40                |                                 |                    |                    |        |
| Toxaphene           | 8001-35-2         | <160               |                                 |                    |                    |        |

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Lab Reference # GTK 28902  
Project Name: K Hovnanian California Region  
Project #: 3951-CR

**Organochlorine Pesticides (EPA 8081A)**

| Client Sample ID | Lab Sample Number | Date Received      | Date Sampled       | Date Extracted     | Date Analyzed      | Matrix |
|------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------|
| #10              | 28902-010         | 6/11/2024<br>11:55 | 6/10/2024<br>12:00 | 6/13/2024<br>16:00 | 6/17/2024<br>15:01 | Soil   |

| <u>ANALYTE</u>      | <u>CAS #</u> | <u>µg/kg</u> |
|---------------------|--------------|--------------|
| Aldrin              | 309-00-2     | <8.0         |
| alpha-BHC           | 319-84-6     | <20          |
| beta-BHC            | 319-85-7     | <20          |
| gamma-BHC (Lindane) | 58-89-9      | <20          |
| delta-BHC           | 319-86-8     | <40          |
| Chlordane           | 57-74-9      | <120         |
| 4,4'-DDD            | 72-54-8      | <40          |
| 4,4'-DDE            | 72-55-9      | <20          |
| 4,4'-DDT            | 50-29-3      | <40          |
| Dieldrin            | 60-57-1      | <8.0         |
| Endosulfan I        | 959-98-8     | <40          |
| Endosulfan II       | 33213-65-9   | <20          |
| Endosulfan sulfate  | 1031-07-8    | <40          |
| Endrin              | 72-20-8      | <40          |
| Endrin aldehyde     | 7421-93-4    | <40          |
| Endrin ketone       | 53494-70-5   | <20          |
| Heptachlor          | 76-44-8      | <8.0         |
| Heptachlor epoxide  | 1024-57-3    | <20          |
| Methoxychlor        | 72-43-5      | <40          |
| Toxaphene           | 8001-35-2    | <160         |

Surrogate:                      % RC\*  
Decachlorobiphenyl      110  
  
\* Acceptable Recovery: 38-133 %  
  
Dilution Factor: 4  
Data Qualifiers: D1,

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Project Name: K Hovnanian California Region  
Project #: 3951-CR

**Organochlorine Pesticides (EPA 8081A)**

| Client Sample ID    | Lab Sample Number | Date Received      | Date Sampled       | Date Extracted     | Date Analyzed      | Matrix |
|---------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------|
| #11                 | 28902-011         | 6/11/2024<br>11:55 | 6/10/2024<br>12:00 | 6/13/2024<br>16:00 | 6/17/2024<br>15:15 | Soil   |
| <u>ANALYTE</u>      | <u>CAS #</u>      | <u>µg/kg</u>       |                    | <u>Surrogate:</u>  | <u>% RC*</u>       |        |
| Aldrin              | 309-00-2          | <8.0               |                    | Decachlorobiphenyl | 117                |        |
| alpha-BHC           | 319-84-6          | <20                |                    |                    |                    |        |
| beta-BHC            | 319-85-7          | <20                |                    |                    |                    |        |
| gamma-BHC (Lindane) | 58-89-9           | <20                |                    |                    |                    |        |
| delta-BHC           | 319-86-8          | <40                |                    |                    |                    |        |
| Chlordane           | 57-74-9           | <120               |                    |                    |                    |        |
| 4,4'-DDD            | 72-54-8           | <40                |                    |                    |                    |        |
| 4,4'-DDE            | 72-55-9           | <20                |                    |                    |                    |        |
| 4,4'-DDT            | 50-29-3           | <40                |                    |                    |                    |        |
| Dieldrin            | 60-57-1           | <8.0               |                    |                    |                    |        |
| Endosulfan I        | 959-98-8          | <40                |                    |                    |                    |        |
| Endosulfan II       | 33213-65-9        | <20                |                    |                    |                    |        |
| Endosulfan sulfate  | 1031-07-8         | <40                |                    |                    |                    |        |
| Endrin              | 72-20-8           | <40                |                    |                    |                    |        |
| Endrin aldehyde     | 7421-93-4         | <40                |                    |                    |                    |        |
| Endrin ketone       | 53494-70-5        | <20                |                    |                    |                    |        |
| Heptachlor          | 76-44-8           | <8.0               |                    |                    |                    |        |
| Heptachlor epoxide  | 1024-57-3         | <20                |                    |                    |                    |        |
| Methoxychlor        | 72-43-5           | <40                |                    |                    |                    |        |
| Toxaphene           | 8001-35-2         | <160               |                    |                    |                    |        |

\* Acceptable Recovery: 38-133 %

Dilution Factor: 4

Data Qualifiers: D1,



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Lab Reference # GTK 28902  
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Project #: 3951-CR

**Organochlorine Pesticides (EPA 8081A)**

| Client Sample ID | Lab Sample Number | Date Received      | Date Sampled       | Date Extracted     | Date Analyzed      | Matrix |
|------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------|
| #12              | 28902-012         | 6/11/2024<br>11:55 | 6/10/2024<br>12:00 | 6/13/2024<br>16:00 | 6/17/2024<br>15:30 | Soil   |

| <u>ANALYTE</u>      | <u>CAS #</u> | <u>µg/kg</u> |
|---------------------|--------------|--------------|
| Aldrin              | 309-00-2     | <8.0         |
| alpha-BHC           | 319-84-6     | <20          |
| beta-BHC            | 319-85-7     | <20          |
| gamma-BHC (Lindane) | 58-89-9      | <20          |
| delta-BHC           | 319-86-8     | <40          |
| Chlordane           | 57-74-9      | <120         |
| 4,4'-DDD            | 72-54-8      | <40          |
| 4,4'-DDE            | 72-55-9      | <20          |
| 4,4'-DDT            | 50-29-3      | <40          |
| Dieldrin            | 60-57-1      | <8.0         |
| Endosulfan I        | 959-98-8     | <40          |
| Endosulfan II       | 33213-65-9   | <20          |
| Endosulfan sulfate  | 1031-07-8    | <40          |
| Endrin              | 72-20-8      | <40          |
| Endrin aldehyde     | 7421-93-4    | <40          |
| Endrin ketone       | 53494-70-5   | <20          |
| Heptachlor          | 76-44-8      | <8.0         |
| Heptachlor epoxide  | 1024-57-3    | <20          |
| Methoxychlor        | 72-43-5      | <40          |
| Toxaphene           | 8001-35-2    | <160         |

Surrogate:                      % RC\*  
Decachlorobiphenyl      120  
  
\* Acceptable Recovery: 38-133 %  
  
Dilution Factor: 4  
Data Qualifiers: D1,

Mr Kyle Mchargue  
GeoTek, Inc.  
1548 N. Maple St  
Corona, CA, 92880

Lab Reference # GTK 28902  
Project Name: K Hovnanian California Region  
Project #: 3951-CR

**Organochlorine Pesticides (EPA 8081A)**

| Client Sample ID    | Lab Sample Number | Date Received | Date Sampled | Date Extracted     | Date Analyzed     | Matrix |
|---------------------|-------------------|---------------|--------------|--------------------|-------------------|--------|
| Method Blank        | MBBL0611241       |               |              | 6/11/2024<br>11:49 | 6/13/2024<br>7:26 | Soil   |
| <u>ANALYTE</u>      | <u>CAS #</u>      | <u>µg/kg</u>  |              | <u>Surrogate:</u>  | <u>% RC*</u>      |        |
| Aldrin              | 309-00-2          | <2.0          |              | Decachlorobiphenyl | 131               |        |
| alpha-BHC           | 319-84-6          | <5.0          |              |                    |                   |        |
| beta-BHC            | 319-85-7          | <5.0          |              |                    |                   |        |
| gamma-BHC (Lindane) | 58-89-9           | <5.0          |              |                    |                   |        |
| delta-BHC           | 319-86-8          | <10           |              |                    |                   |        |
| Chlordane           | 57-74-9           | <30           |              |                    |                   |        |
| 4,4'-DDD            | 72-54-8           | <10           |              |                    |                   |        |
| 4,4'-DDE            | 72-55-9           | <5.0          |              |                    |                   |        |
| 4,4'-DDT            | 50-29-3           | <10           |              |                    |                   |        |
| Dieldrin            | 60-57-1           | <2.0          |              |                    |                   |        |
| Endosulfan I        | 959-98-8          | <10           |              |                    |                   |        |
| Endosulfan II       | 33213-65-9        | <5.0          |              |                    |                   |        |
| Endosulfan sulfate  | 1031-07-8         | <10           |              |                    |                   |        |
| Endrin              | 72-20-8           | <10           |              |                    |                   |        |
| Endrin aldehyde     | 7421-93-4         | <10           |              |                    |                   |        |
| Endrin ketone       | 53494-70-5        | <5.0          |              |                    |                   |        |
| Heptachlor          | 76-44-8           | <2.0          |              |                    |                   |        |
| Heptachlor epoxide  | 1024-57-3         | <5.0          |              |                    |                   |        |
| Methoxychlor        | 72-43-5           | <10           |              |                    |                   |        |
| Toxaphene           | 8001-35-2         | <40           |              |                    |                   |        |

\* Acceptable Recovery: 38-133 %

Dilution Factor: 1

Data Qualifiers: None

Mr Kyle Mchargue  
GeoTek, Inc.  
1548 N. Maple St  
Corona, CA, 92880

Lab Reference # GTK 28902  
Project Name: K Hovnanian California Region  
Project #: 3951-CR

**Metals**

| Client Sample ID | Lab Sample Number |                   | Date Received   |              | Date Sampled          |                      | Matrix      |           |  |
|------------------|-------------------|-------------------|-----------------|--------------|-----------------------|----------------------|-------------|-----------|--|
| #1               | 28902-001         |                   | 6/11/2024 11:55 |              | 6/10/2024 12:00       |                      | Soil        |           |  |
|                  | <u>ANALYTE</u>    | <u>EPA Method</u> | <u>Result</u>   | <u>Units</u> | <u>Date Extracted</u> | <u>Date Analyzed</u> | <u>Qual</u> | <u>DF</u> |  |
|                  | Arsenic           | 6010B             | 9.9             | mg/kg        | 06/12/24 13:00        | 06/13/24 16:02       | --          | 1         |  |
| #2               | 28902-002         |                   | 6/11/2024 11:55 |              | 6/10/2024 12:00       |                      | Soil        |           |  |
|                  | <u>ANALYTE</u>    | <u>EPA Method</u> | <u>Result</u>   | <u>Units</u> | <u>Date Extracted</u> | <u>Date Analyzed</u> | <u>Qual</u> | <u>DF</u> |  |
|                  | Arsenic           | 6010B             | 7.6             | mg/kg        | 06/12/24 13:00        | 06/13/24 16:04       | --          | 1         |  |
| #3               | 28902-003         |                   | 6/11/2024 11:55 |              | 6/10/2024 12:00       |                      | Soil        |           |  |
|                  | <u>ANALYTE</u>    | <u>EPA Method</u> | <u>Result</u>   | <u>Units</u> | <u>Date Extracted</u> | <u>Date Analyzed</u> | <u>Qual</u> | <u>DF</u> |  |
|                  | Arsenic           | 6010B             | 7.2             | mg/kg        | 06/12/24 13:00        | 06/13/24 16:11       | --          | 1         |  |
| #4               | 28902-004         |                   | 6/11/2024 11:55 |              | 6/10/2024 12:00       |                      | Soil        |           |  |
|                  | <u>ANALYTE</u>    | <u>EPA Method</u> | <u>Result</u>   | <u>Units</u> | <u>Date Extracted</u> | <u>Date Analyzed</u> | <u>Qual</u> | <u>DF</u> |  |
|                  | Arsenic           | 6010B             | 6.9             | mg/kg        | 06/12/24 13:00        | 06/13/24 16:14       | --          | 1         |  |
| #5               | 28902-005         |                   | 6/11/2024 11:55 |              | 6/10/2024 12:00       |                      | Soil        |           |  |
|                  | <u>ANALYTE</u>    | <u>EPA Method</u> | <u>Result</u>   | <u>Units</u> | <u>Date Extracted</u> | <u>Date Analyzed</u> | <u>Qual</u> | <u>DF</u> |  |
|                  | Arsenic           | 6010B             | 6.9             | mg/kg        | 06/12/24 13:00        | 06/13/24 16:16       | --          | 1         |  |
| #6               | 28902-006         |                   | 6/11/2024 11:55 |              | 6/10/2024 12:00       |                      | Soil        |           |  |
|                  | <u>ANALYTE</u>    | <u>EPA Method</u> | <u>Result</u>   | <u>Units</u> | <u>Date Extracted</u> | <u>Date Analyzed</u> | <u>Qual</u> | <u>DF</u> |  |
|                  | Arsenic           | 6010B             | 6.4             | mg/kg        | 06/12/24 13:00        | 06/13/24 16:18       | --          | 1         |  |

Mr Kyle Mchargue  
GeoTek, Inc.  
1548 N. Maple St  
Corona, CA, 92880

Lab Reference # GTK 28902  
Project Name: K Hovnanian California Region  
Project #: 3951-CR

**Metals**

| Client Sample ID | Lab Sample Number |                   | Date Received   |              | Date Sampled          |                      | Matrix      |           |  |
|------------------|-------------------|-------------------|-----------------|--------------|-----------------------|----------------------|-------------|-----------|--|
| #7               | 28902-007         |                   | 6/11/2024 11:55 |              | 6/10/2024 12:00       |                      | Soil        |           |  |
|                  | <u>ANALYTE</u>    | <u>EPA Method</u> | <u>Result</u>   | <u>Units</u> | <u>Date Extracted</u> | <u>Date Analyzed</u> | <u>Qual</u> | <u>DF</u> |  |
|                  | Arsenic           | 6010B             | 7.1             | mg/kg        | 06/12/24 13:00        | 06/13/24 16:21       | --          | 1         |  |
| #8               | 28902-008         |                   | 6/11/2024 11:55 |              | 6/10/2024 12:00       |                      | Soil        |           |  |
|                  | <u>ANALYTE</u>    | <u>EPA Method</u> | <u>Result</u>   | <u>Units</u> | <u>Date Extracted</u> | <u>Date Analyzed</u> | <u>Qual</u> | <u>DF</u> |  |
|                  | Arsenic           | 6010B             | 6.3             | mg/kg        | 06/12/24 13:00        | 06/13/24 16:23       | --          | 1         |  |
| #9               | 28902-009         |                   | 6/11/2024 11:55 |              | 6/10/2024 12:00       |                      | Soil        |           |  |
|                  | <u>ANALYTE</u>    | <u>EPA Method</u> | <u>Result</u>   | <u>Units</u> | <u>Date Extracted</u> | <u>Date Analyzed</u> | <u>Qual</u> | <u>DF</u> |  |
|                  | Arsenic           | 6010B             | 6.1             | mg/kg        | 06/12/24 13:00        | 06/13/24 16:25       | --          | 1         |  |
| #10              | 28902-010         |                   | 6/11/2024 11:55 |              | 6/10/2024 12:00       |                      | Soil        |           |  |
|                  | <u>ANALYTE</u>    | <u>EPA Method</u> | <u>Result</u>   | <u>Units</u> | <u>Date Extracted</u> | <u>Date Analyzed</u> | <u>Qual</u> | <u>DF</u> |  |
|                  | Arsenic           | 6010B             | 5.7             | mg/kg        | 06/12/24 13:00        | 06/13/24 16:28       | --          | 1         |  |
| #11              | 28902-011         |                   | 6/11/2024 11:55 |              | 6/10/2024 12:00       |                      | Soil        |           |  |
|                  | <u>ANALYTE</u>    | <u>EPA Method</u> | <u>Result</u>   | <u>Units</u> | <u>Date Extracted</u> | <u>Date Analyzed</u> | <u>Qual</u> | <u>DF</u> |  |
|                  | Arsenic           | 6010B             | 6.4             | mg/kg        | 06/12/24 13:00        | 06/13/24 16:30       | --          | 1         |  |
| #12              | 28902-012         |                   | 6/11/2024 11:55 |              | 6/10/2024 12:00       |                      | Soil        |           |  |
|                  | <u>ANALYTE</u>    | <u>EPA Method</u> | <u>Result</u>   | <u>Units</u> | <u>Date Extracted</u> | <u>Date Analyzed</u> | <u>Qual</u> | <u>DF</u> |  |
|                  | Arsenic           | 6010B             | 7.5             | mg/kg        | 06/12/24 13:00        | 06/13/24 16:32       | --          | 1         |  |

Mr Kyle Mchargue  
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1548 N. Maple St  
Corona, CA, 92880

Lab Reference # GTK 28902  
Project Name: K Hovnanian California Region  
Project #: 3951-CR

**Metals**

| Client Sample ID |                | Lab Sample Number | Date Received | Date Sampled |                       | Matrix               |             |           |  |  |
|------------------|----------------|-------------------|---------------|--------------|-----------------------|----------------------|-------------|-----------|--|--|
| Method Blank     |                |                   |               |              |                       | Soil                 |             |           |  |  |
| <u>MB ID</u>     | <u>ANALYTE</u> | <u>EPA Method</u> | <u>Result</u> | <u>Units</u> | <u>Date Extracted</u> | <u>Date Analyzed</u> | <u>Qual</u> | <u>DF</u> |  |  |
| MBJH0612241      | Arsenic        | 6010B             | <2.0          | mg/kg        | 06/12/24 13:00        | 06/13/24 15:12       | --          | 1         |  |  |

**QA/QC Report**  
for  
**Organochlorine Pesticides (EPA 8081A)**  
Reporting Units: ppb

**Matrix Spike (MS) / Matrix Spike Duplicate (MSD)**

Date of Extraction: 6/11/2024 11:49

Date of Analysis: 6/13/2024 8:39

Dup Date of Analysis: 6/13/2024 8:54

Laboratory Sample #: 28888-001

MS/MSD Qualifiers: None

Reference #: GTK 28902

| Analyte             | R    | Spike Conc. | MS   | MSD  | %MS | %MSD | RPD | ACP %MS | ACP RPD | Qual |
|---------------------|------|-------------|------|------|-----|------|-----|---------|---------|------|
| Aldrin              | 0.00 | 20.0        | 14.0 | 12.8 | 70  | 64   | 9   | 14-130  | 25      | --   |
| alpha-BHC           | 0.00 | 20.0        | 13.2 | 12.2 | 66  | 61   | 8   | 19-130  | 23      | --   |
| beta-BHC            | 0.00 | 20.0        | 16.8 | 15.0 | 84  | 75   | 11  | 21-130  | 25      | --   |
| gamma-BHC (Lindane) | 0.00 | 20.0        | 14.4 | 13.2 | 72  | 66   | 9   | 26-130  | 24      | --   |
| 4,4'-DDD            | 0.00 | 20.0        | 18.4 | 17.5 | 92  | 88   | 5   | 31-138  | 21      | --   |
| 4,4'-DDE            | 0.00 | 20.0        | 18.0 | 16.7 | 90  | 84   | 7   | 32-142  | 20      | --   |
| 4,4'-DDT            | 0.00 | 20.0        | 20.5 | 19.3 | 102 | 96   | 6   | 30-154  | 22      | --   |
| delta-BHC           | 0.00 | 20.0        | 16.8 | 15.0 | 84  | 75   | 11  | 29-130  | 28      | --   |
| Dieldrin            | 0.00 | 20.0        | 17.7 | 16.6 | 89  | 83   | 6   | 29-130  | 21      | --   |
| Endosulfan I        | 0.00 | 20.0        | 17.0 | 14.0 | 85  | 70   | 19  | 26-135  | 25      | --   |
| Endosulfan II       | 0.00 | 20.0        | 18.5 | 17.4 | 93  | 87   | 6   | 23-130  | 27      | --   |
| Endosulfan sulfate  | 0.00 | 20.0        | 18.0 | 16.1 | 90  | 81   | 11  | D-136   | 50      | --   |
| Endrin              | 0.00 | 20.0        | 18.1 | 17.0 | 91  | 85   | 6   | 26-138  | 27      | --   |
| Endrin Aldehyde     | 0.00 | 20.0        | 16.3 | 14.6 | 81  | 73   | 11  | D-130   | 50      | --   |
| Endrin ketone       | 0.00 | 20.0        | 17.1 | 16.0 | 86  | 80   | 7   | 12-130  | 50      | --   |
| Heptachlor          | 0.00 | 20.0        | 12.8 | 11.6 | 64  | 58   | 10  | 18-130  | 28      | --   |
| Heptachlor epoxide  | 0.00 | 20.0        | 16.6 | 15.0 | 83  | 75   | 10  | 25-130  | 26      | --   |
| Methoxychlor        | 0.00 | 20.0        | 16.7 | 15.9 | 84  | 79   | 5   | 21-136  | 32      | --   |

**Surrogate Recoveries for Spike Samples**

| Surrogate (%RC)    | MS  | MSD | Qual                     | LCS | LCSD | Qual                                | ACP % RC |
|--------------------|-----|-----|--------------------------|-----|------|-------------------------------------|----------|
| Decachlorobiphenyl | 125 | 120 | <input type="checkbox"/> | 133 | 134  | <input checked="" type="checkbox"/> | 38-133   |

**Laboratory Control Sample (LCS) / Laboratory Control Sample Duplicate (LCSD)**

Date of Extraction: 6/11/2024 11:49

Date of Analysis: 6/13/2024 7:41

Dup Date of Analysis: 6/13/2024 7:55

Laboratory Sample #: BL0611241A

LCS/LCSD Qualifiers: R2, S1,

| Analyte             | Spike Conc. | LCS  | LCSD | %LCS | %LCSD | RPD | ACP %LCS | ACP RPD | Qual |
|---------------------|-------------|------|------|------|-------|-----|----------|---------|------|
| Aldrin              | 20.0        | 15.0 | 13.5 | 75   | 68    | 11  | 8-130    | 29      | --   |
| alpha-BHC           | 20.0        | 14.7 | 14.0 | 74   | 70    | 5   | 14-130   | 30      | --   |
| beta-BHC            | 20.0        | 16.2 | 16.5 | 81   | 82    | 2   | 26-130   | 25      | --   |
| gamma-BHC (Lindane) | 20.0        | 15.0 | 14.5 | 75   | 73    | 3   | 19-130   | 28      | --   |
| 4,4'-DDD            | 20.0        | 18.7 | 18.8 | 94   | 94    | 1   | 44-132   | 20      | --   |
| 4,4'-DDE            | 20.0        | 17.7 | 17.4 | 89   | 87    | 2   | 35-133   | 20      | --   |

**QA/QC Report**  
**for**  
**Organochlorine Pesticides (EPA 8081A)**  
Reporting Units: ppb

| Analyte            | Spike Conc. | LCS  | LCSD | %LCS | %LCSD | RPD | ACP %LCS | ACP RPD | Qual |
|--------------------|-------------|------|------|------|-------|-----|----------|---------|------|
| 4,4'-DDT           | 20.0        | 20.1 | 19.9 | 100  | 100   | 1   | 41-142   | 20      | --   |
| delta-BHC          | 20.0        | 16.7 | 17.3 | 84   | 86    | 4   | 29-130   | 26      | --   |
| Dieldrin           | 20.0        | 16.9 | 17.0 | 84   | 85    | 1   | 31-130   | 22      | --   |
| Endosulfan I       | 20.0        | 14.9 | 14.5 | 75   | 73    | 3   | 29-130   | 28      | --   |
| Endosulfan II      | 20.0        | 16.0 | 18.3 | 80   | 91    | 13  | 28-130   | 27      | --   |
| Endosulfan sulfate | 20.0        | 1.22 | 13.3 | 6    | 67    | 166 | 2-145    | 43      | R2,  |
| Endrin             | 20.0        | 16.9 | 17.3 | 84   | 86    | 2   | 28-130   | 21      | --   |
| Endrin Aldehyde    | 20.0        | 1.95 | 12.0 | 10   | 60    | 144 | 3-130    | 41      | R2,  |
| Endrin ketone      | 20.0        | 6.54 | 16.6 | 33   | 83    | 87  | 18-130   | 23      | R2,  |
| Heptachlor         | 20.0        | 13.7 | 12.4 | 69   | 62    | 10  | 10-130   | 33      | --   |
| Heptachlor epoxide | 20.0        | 15.7 | 15.2 | 78   | 76    | 3   | 24-130   | 27      | --   |
| Methoxychlor       | 20.0        | 17.1 | 18.2 | 86   | 91    | 6   | 32-134   | 17      | --   |

**QA/QC Report  
for  
Metals**

Reference #: GTK 28902

Reporting units: ppm

**Matrix Spike (MS) / Matrix Spike Duplicate (MSD)**

**6010B**

Laboratory Sample #: 28900-001

Date of Extraction: 06/12/24 13:00

| Analyte | MS Date of Analysis | MSD Date of Analysis | R1   | SPC CONC | MS   | MSD  | % MS | % MSD | RPD | ACP %MS | ACP RPD | Qualifiers |
|---------|---------------------|----------------------|------|----------|------|------|------|-------|-----|---------|---------|------------|
| Arsenic | 06/13/24 15:24      | 06/13/24 15:27       | 2.40 | 20.0     | 21.0 | 21.7 | 93   | 97    | 3   | 75-125  | 20      | --         |

**Laboratory Control Spike (LCS) / Laboratory Control Spike Duplicate (LCSD)**

**6010B**

Laboratory Sample #: JH0612241

Date of Extraction: 06/12/24 13:00

| Analyte | LCS Date of Analysis | LCSD Date of Analysis |    | SPC CONC | LCS  | LCSD | % LCS | % LCSD | RPD | ACP %LCS | ACP RPD | Qualifiers |
|---------|----------------------|-----------------------|----|----------|------|------|-------|--------|-----|----------|---------|------------|
| Arsenic | 06/13/24 15:15       | 06/13/24 15:18        | -- | 20.0     | 18.8 | 18.7 | 94    | 94     | 1   | 80-120   | 20      | --         |



# Data Qualifier Definitions

## Qualifier

D1 = Sample required dilution due to matrix.

R2 = RPD/RSD exceeded the laboratory acceptance limit.

|            |       |                    |          |
|------------|-------|--------------------|----------|
| BL0611241A | 8081A | Endosulfan sulfate | LCS/LCSD |
| BL0611241A | 8081A | Endrin Aldehyde    | LCS/LCSD |
| BL0611241A | 8081A | Endrin ketone      | LCS/LCSD |

S1 = Surrogate recovery was above laboratory acceptance limits.

|            |       |                    |      |
|------------|-------|--------------------|------|
| BL0611241A | 8081A | Decachlorobiphenyl | LCSD |
|------------|-------|--------------------|------|

## Definition of terms:

|                          |                                                                                                                     |
|--------------------------|---------------------------------------------------------------------------------------------------------------------|
| R                        | Result of unspiked laboratory sample used for matrix spike determination.                                           |
| SP CONC (or Spike Conc.) | Spike concentration added to sample or blank                                                                        |
| MS                       | Matrix Spike sample result                                                                                          |
| MSD                      | Matrix Spike Duplicate sample result                                                                                |
| %MS                      | Percent recovery of MS: $\{(MS-R1) / SP\ CONC\} \times 100$                                                         |
| %MSD                     | Percent recovery of MSD: $\{(MSD-R1) / SP\ CONC\} \times 100$                                                       |
| RPD (for MS/MSD)         | Relative Percent Difference: $\{(MS-MSD) / (MS+MSD)\} \times 100 \times 2$                                          |
| LCS                      | Laboratory Control Sample result                                                                                    |
| LCSD                     | Laboratory Control Sample Duplicate result                                                                          |
| %LCS                     | Percent recovery of LCS: $\{(LCS) / SP\ CONC\} \times 100$                                                          |
| %LCSD                    | Percent recovery of LCSD: $\{(LCSD) / SP\ CONC\} \times 100$                                                        |
| RPD (for LCS/LCSD)       | Relative Percent Difference: $\{(LCS-LCSD) / (LCS+LCSD)\} \times 100 \times 2$                                      |
| ACP %LCS                 | Acceptable percent recovery range for Laboratory Control Samples.                                                   |
| ACP %MS                  | Acceptable percent recovery range for Matrix Spike samples                                                          |
| ACP RPD                  | Acceptable Relative Percent Difference                                                                              |
| D                        | Detectable, result must be greater than zero                                                                        |
| Qual                     | A checked box indicates a data qualifier was utilized and/or required for this analyte<br>see attached explanation. |
| ND                       | Analyte Not Detected                                                                                                |

By signing above, client acknowledges responsibility for payment of all services requested on this chain of custody form and any additional services provided in support of this project. Payment is due within

## Sample Receipt Report

Laboratory Reference GTK 28902

Logged in by JR

Received: 06/11/24 11:55

Company Name: GeoTek, Inc.

Method of Shipment: Hand Delivered

Project Manager: Mr Kyle Mcharque

Shipping Container: See Notes

Project Name: K Hovnanian California Region

# Shipping Containers: 1

Project #: 3951-CR

Sample Quantity

12 Soil

|                                |                                              |                                         |                               |
|--------------------------------|----------------------------------------------|-----------------------------------------|-------------------------------|
| Chain of Custody               | Complete <input checked="" type="checkbox"/> | Incomplete <input type="checkbox"/>     | None <input type="checkbox"/> |
| Samples On Ice                 | Yes, Wet <input checked="" type="checkbox"/> | Yes, Blue <input type="checkbox"/>      | No <input type="checkbox"/>   |
| Observed Temp. (°C): <u>6</u>  | Thermometer ID: <u>IR#3</u>                  | Adjusted Temp.: <u>6+(-0)=6</u>         |                               |
| Shipping Intact                | Yes <input type="checkbox"/>                 | N/A <input checked="" type="checkbox"/> | No <input type="checkbox"/>   |
| Shipping Custody Seals Intact  | Yes <input type="checkbox"/>                 | N/A <input checked="" type="checkbox"/> | No <input type="checkbox"/>   |
| Samples Intact                 | Yes <input checked="" type="checkbox"/>      |                                         | No <input type="checkbox"/>   |
| Sample Custody Seals Intact    | Yes <input type="checkbox"/>                 | N/A <input checked="" type="checkbox"/> | No <input type="checkbox"/>   |
| Custody Seals Signed & Dated   | Yes <input type="checkbox"/>                 | N/A <input checked="" type="checkbox"/> | No <input type="checkbox"/>   |
| Proper Test Containers         | Yes <input checked="" type="checkbox"/>      |                                         | No <input type="checkbox"/>   |
| Proper Test Preservations      | Yes <input checked="" type="checkbox"/>      |                                         | No <input type="checkbox"/>   |
| Samples Within Hold Times      | Yes <input checked="" type="checkbox"/>      |                                         | No <input type="checkbox"/>   |
| VOAs Have Zero Headspace       | Yes <input type="checkbox"/>                 | N/A <input checked="" type="checkbox"/> | No <input type="checkbox"/>   |
| Sample Labels                  | Complete <input checked="" type="checkbox"/> | Incomplete <input type="checkbox"/>     | None <input type="checkbox"/> |
| Sample Information Matches COC | Yes <input checked="" type="checkbox"/>      | N/A <input type="checkbox"/>            | No <input type="checkbox"/>   |

### Notes

Samples in plastic bag.

Client Notified

By

On

# **APPENDIX H**

## **PROJECT TEAM QUALIFICATIONS**



# Kyle R. McHargue, PG, CEG

Project Geologist

## Registrations

CA Certified Engineering Geologist,  
CEG 2790  
CA Professional Geologist, PG 9790  
OR Registered Geologist, G2885  
ID Professional Geologist, PGL-1844

## Education

B.A., Geology, University of Hawaii,  
Manoa

## Certifications

OSHA 40-Hr HAZWOPER  
OSHA 8-Hr HAZWOPER Refresher  
OSHA 10-Hour Construction Safety and  
Health Training  
Nuclear Gauge Certified  
APNGA Radiation Safety Officer Certified  
First Aid/CPR

## Professional Affiliations

BIA Riverside  
BIA Emerging Leaders

## Professional Experience

Kyle McHargue has 10 years of geotechnical and environmental experience working on and managing a diverse range of geotechnical and environmental projects throughout Southern California throughout Riverside, San Bernardino, Orange, San Diego, Los Angeles and Alameda counties. His geotechnical experience has ranged from staff to project geologist. Mr. McHargue's responsibilities include preparation of proposals, project management, preliminary geotechnical investigations, rippability studies, fault hazard investigations, landslide investigations, seismic refraction surveys, settlement monitoring, percolation and infiltration studies, manure and methane evaluations, and field studies as a field and project geologist for a diverse range of grading projects. Mr. McHargue has performed hundreds of Phase I and Phase II Environmental Site Assessments for various property acquisitions and transfers in Riverside, Orange, San Diego, Los Angeles, San Bernardino, Kern, Fresno and Imperial Counties in California and Maricopa County in Arizona. Mr. McHargue also has over 5 years of field and office experience in land surveying and Storm Water Pollution Prevention Program (SWPPP) inspections.

## Representative Project Experience-

Corona, Riverside County, California - Project Manager. Directed a geotechnical investigation, fault rupture hazard and landslide investigations, slope stability analysis, geotechnical reporting, as well as a Phase I Environmental Site Assessment for the Chaudhuri Estates hillside residential development.

Wildomar, Riverside County, California – Field Geologist. Supervised rough grading operations for 84-lot residential subdivision. In field challenges included stabilization fill design, fault hazard mapping, and high groundwater mitigation design.

Temecula, Riverside County, California – Project Geologist. Performed AP Fault Zone investigation, geotechnical and infiltration investigations for two adjacent commercial projects.

Ontario, San Bernardino County, California – Project and Field Geologist. Performed geotechnical, infiltration and manure/methane investigations for 121-acre development. Also supervised rough grading operations for a residential development included field mapping, field recommendations for remedial grading and preparation of reports and geologic maps.

Temecula, Riverside County, California – Project Geologist. Forensic distress investigation for religious center's structural & wall failures.

Anaheim Hills, Orange County, California – Project Geologist. Planned and performed geotechnical, infiltration investigations including all report preparation and slope stability analysis.

Coachella, Riverside County, California – Lead Field Geologist. Managed and geologically mapped 1,800 linear feet of fault trenching on the San Andreas Fault, including all background research and report preparation.

## Employment History

**GeoTek, Inc.**, Riverside-Project Geologist Jan. 2019 – Present

**LGC Geo-Environmental, Inc.**, Temecula-Project Geologist Feb. 2015 – Jan. 2019

**LGC Geo-Environmental, Inc.**, Temecula-Staff Geologist Dec. 2013 – Feb. 2015



# Anna M. Scott

Project Geologist

## Education

B.S., Geology, University of California,  
Riverside

## Professional Experience

Ms. Anna Scott has over 30 years of geotechnical experience and has worked on or managed a wide range of geotechnical projects throughout southern California, including the High Desert, Inland Empire, Antelope Valley, Coachella Valley, Orange County and Bakersfield area. Her geotechnical experience has ranged from field and laboratory technician to field, staff and project geologist. Ms. Scott's responsibilities include preparation of proposals, preliminary geotechnical investigations, seismic studies, settlement monitor installation and studies, and field studies as a technician and geologist for large grading projects. Ms. Scott has performed Phase I and II ESAs for various property acquisitions and transfers throughout southern California.

## Representative Project Experience

Ms. Scott has worked on numerous projects throughout southern California. Her experience includes working with various entities including the public and private sectors. Her vast knowledge includes geotechnical, environmental and materials services. This experience has been attained through small and large projects over the numerous years of her career.

## Employment History

**GeoTek, Inc.**, Riverside-Project Geologist, February 2005 – Present

**GeoSoils, Inc.**, Santa Ana, September 1987 – February 2005



# TRAFFIC STUDY

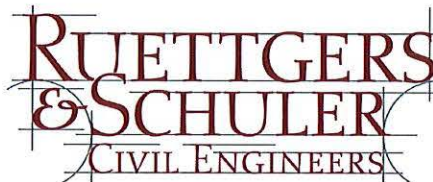
## SILICON VALLEY RANCH CITY OF HANFORD

Prepared for:

QK, INC.

July 2024

Prepared by:



1800 30th Street, Suite 260  
Bakersfield, California 93301

A handwritten signature in blue ink, appearing to read "Ian J. Parks", is written over a horizontal line.

Ian J. Parks, RCE 58155





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## **INTRODUCTION**

The purpose of this study is to evaluate the potential traffic impacts of Silicon Valley Ranch, a proposed residential development located on the south side of Hanford Armona Road, between 13th Avenue and 12th Avenue, in the City of Hanford. A vicinity map is presented in Figure 1 and a location map is presented in Figure 2.

The study is consistent with City guidelines and includes analyses of intersection level of service, roadway capacity, traffic signal warrants and vehicle miles traveled. The scope of the study was developed in coordination with City, County and Caltrans staff and includes eight intersections (four signalized, three unsignalized, one roundabout) and adjoining roadway segments.

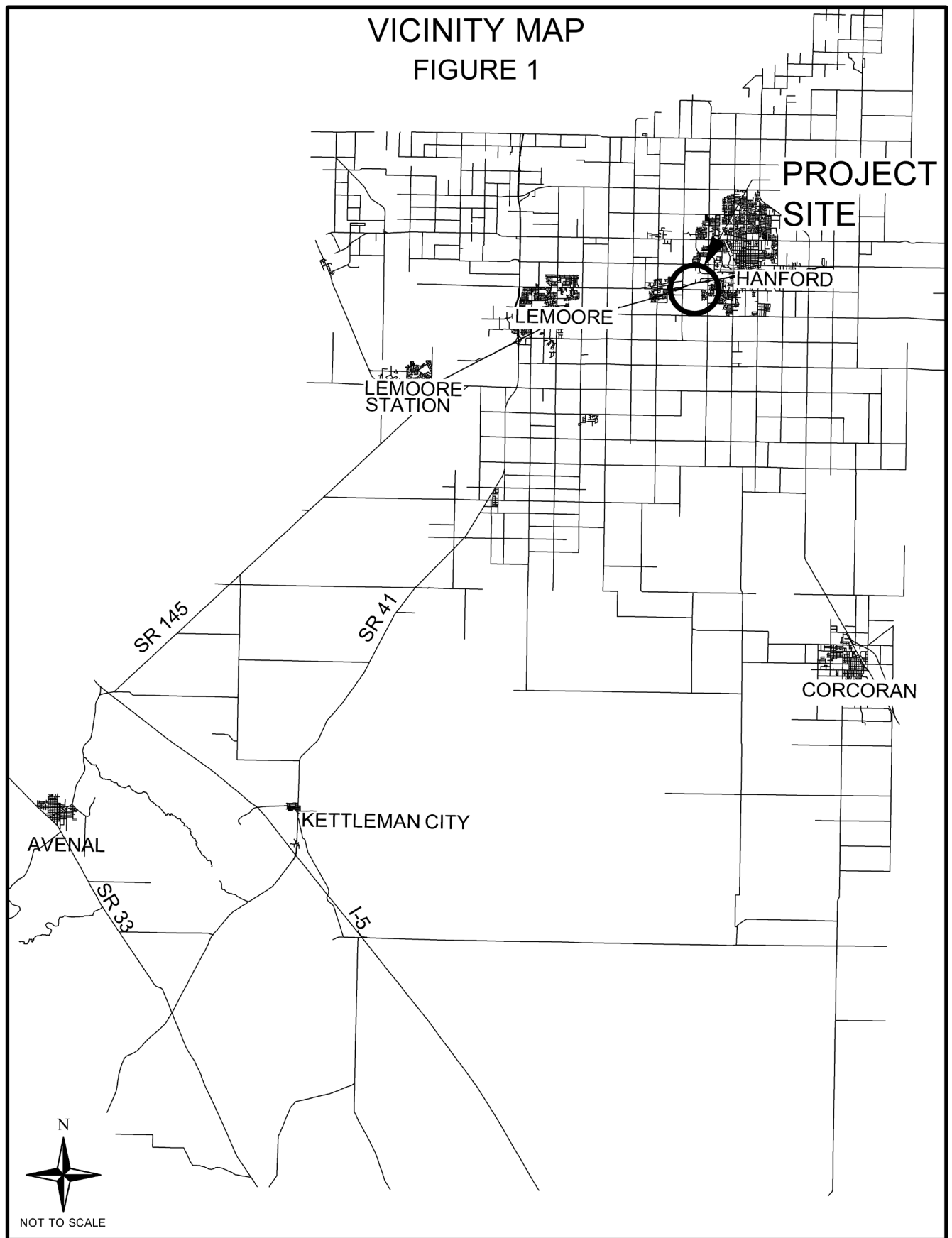
### **Project Description**

The project site would be situated on approximately 75 acres of land which is currently used for agricultural production. The property is zoned R-L-5 (Low Density Residential – 5,000 SF minimum) and has a General Plan Land Use designation of Low Density Residential.

Upon completion, the project would include 326 single-family homes. An opening year of 2026 was assumed for this study. Access to the project site would be provided from Hanford Armona Road. The vesting tentative subdivision map is provided in Figure 3.

### **Existing Land Uses in Project Vicinity**

Residential development is located immediately east of the project site and agricultural land uses lie directly to north, south and west. Residential areas also exist farther to the east and northeast. Commercial land uses are located primarily along the State Route 198 corridor and the northeast and southeast corners of 12th Avenue and Hanford-Armona Road.



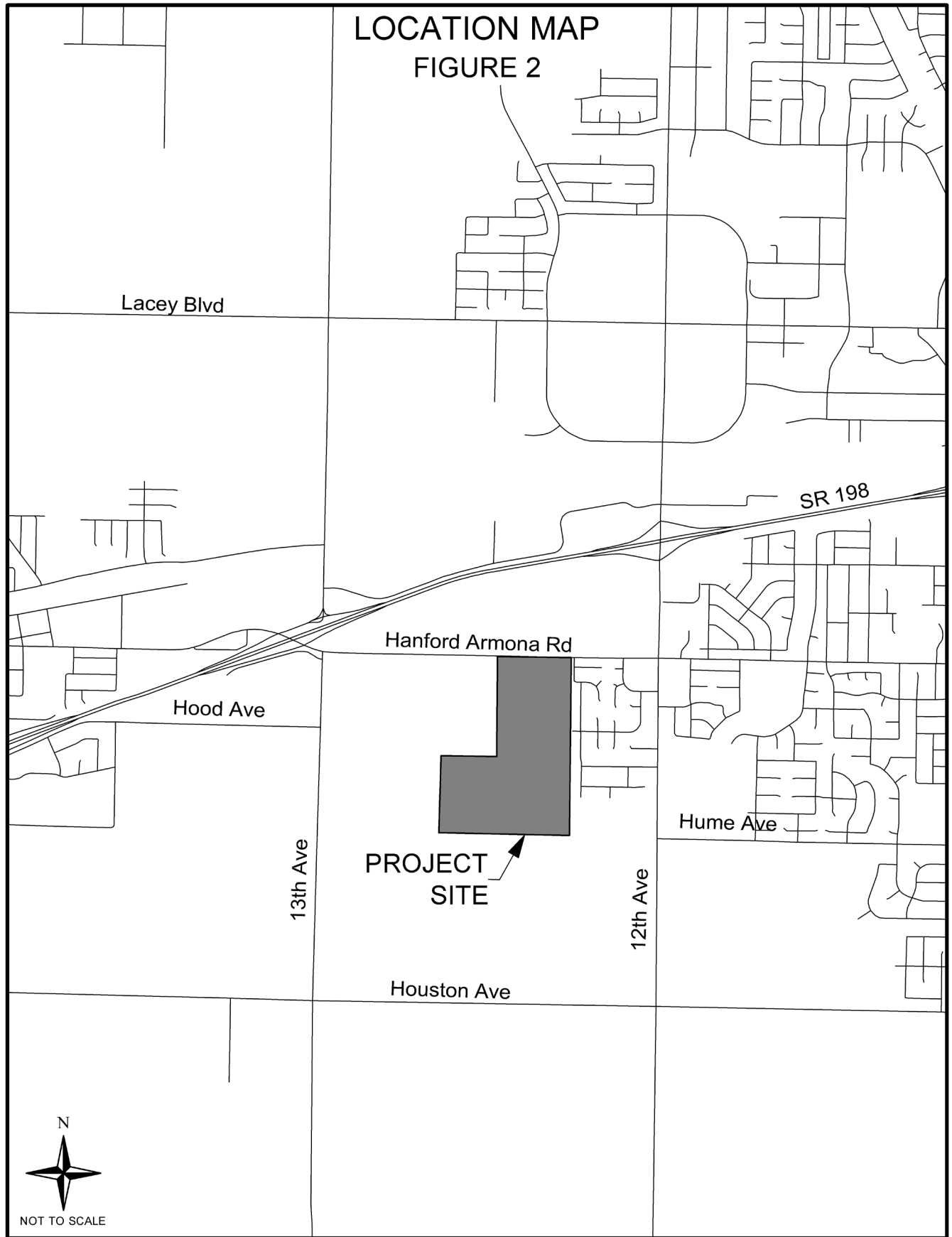




FIGURE 3

VESTING TENTATIVE  
SUBDIVISION MAP TRACT #943  
SILICON VALLEY RANCH

A PORTION OF THE WEST HALF OF THE NORTHEAST QUARTER & A PORTION OF THE EAST HALF OF THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 3, TOWNSHIP 19 SOUTH, RANGE 21 EAST, MOUNT Diablo BASE & MERIDIAN, IN THE CITY OF HANFORD, COUNTY OF KINGS, STATE OF CALIFORNIA.

APPLICANT/OWNER:  
SILICON VALLEY RANCH, LLC  
PHIL R. BOYCE  
20900 BOYCE LANE  
SARATOGA, CA 95070  
408-867-3737

**ZUMWALT  
HANSEN**  
A Company  
609 N. IRWIN STREET  
HANFORD, CA 93230  
TEL: (559) 582-8888  
WWW.GKINC.COM

LEGAL DESCRIPTION

PARCEL 1: 011-040-008 AND 011-040-010  
ALL THAT PORTION OF THE WEST HALF OF THE NORTHEAST QUARTER OF SECTION 3, TOWNSHIP 19 SOUTH, RANGE 21 EAST, MOUNT Diablo BASE AND MERIDIAN, ACCORDING TO THE OFFICIAL PLAT THEREOF, DESCRIBED AS FOLLOWS:  
BEGINNING AT THE NORTHWEST CORNER OF SAID NORTHEAST QUARTER; THENCE SOUTH ALONG THE WEST LINE THEREOF A DISTANCE OF 43.26 CHAINS, MORE OR LESS, TO THE SOUTHWEST CORNER OF SAID NORTHEAST QUARTER; THENCE EAST ALONG THE SOUTH LINE OF SAID QUARTER SECTION; 15.64 CHAINS TO THE CENTER OF A WATER DITCH; THENCE NORTHERLY ALONG THE CENTER LINE OF SAID WATER DITCH 43.26 CHAINS TO A POINT IN THE NORTH LINE OF SAID NORTHEAST QUARTER; THENCE WEST ALONG SAID NORTH LINE A DISTANCE OF 16.25 CHAINS, MORE OR LESS, TO THE POINT OF BEGINNING.

PARCEL 2: 011-040-027  
THAT PORTION OF THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 3, TOWNSHIP 19 SOUTH, RANGE 21 EAST, MOUNT Diablo BASE AND MERIDIAN, IN THE COUNTY OF KINGS, STATE OF CALIFORNIA, MORE PARTICULARLY DESCRIBED AS PARCEL 2 OF PARCEL MAP RECORDED IN BOOK 5, PAGE 72, OF PARCEL MAP RECORDED IN BOOK 5, PAGE 72 OF PARCEL MAPS, KINGS COUNTY RECORDS.

LEGEND

|      |                                   |     |                            |
|------|-----------------------------------|-----|----------------------------|
| AC   | ASPHALT PAVING                    | EM  | ELECTRIC METER             |
| BW   | BACK OF WALK                      | ES  | EXISTING STREET LIGHT      |
| CRN  | ASPHALT CROWN                     | EP  | FIRE HYDRANT               |
| EP   | EDGE OF PAVEMENT                  | FL  | GATE POST                  |
| FL   | FLOW LINE                         | GDP | GUY POLE                   |
| GDP  | GUARD POST                        | GV  | IRRIGATION AG WELL         |
| GV   | GAS VALVE                         | INV | IRRIGATION STANDPIPE       |
| OG   | ORIGINAL GROUND                   | OG  | IRRIGATION VALVE           |
| SSCO | SANITARY SEWER CLEANOUT           | SW  | TOPO                       |
| SW   | SIDEWALK                          | TC  | SANITARY SEWER CLEANOUT    |
| TC   | TOP OF CURB                       | TP  | SANITARY SEWER MANHOLE     |
| TP   | TELEPHONE POLE                    | WBO | SIGN                       |
| WBO  | WATER BLOW-OFF                    |     | S.D. CATCH BASIN MANHOLE   |
|      | EXISTING ELECTRIC LINE (OVERHEAD) |     | STORM DRAIN MANHOLE        |
|      | EXISTING GAS LINE                 |     | EXISTING POST & WIRE FENCE |
|      | EXISTING WOOD FENCE               |     | EXISTING AC SURFACING      |
|      | EXISTING CHAINLINK FENCE          |     | EXISTING CONCRETE SURFACE  |
|      | EXISTING POST & WIRE FENCE        |     | NO REAR OR SIDE ACCESS     |
|      |                                   |     | BENCHMARK                  |
|      |                                   |     | DOWN GUY                   |

LOT INFORMATION

|                 |     |
|-----------------|-----|
| PHASE I LOTS:   | 135 |
| PHASE II LOTS:  | 107 |
| PHASE III LOTS: | 84  |
| TOTAL LOTS:     | 326 |

AREA

|                  |          |
|------------------|----------|
| PHASE I GROSS:   | 31.84±AC |
| PHASE II GROSS:  | 24.85±AC |
| PHASE III GROSS: | 18.33±AC |
| TOTAL SITE:      | 75.02±AC |

|                             |          |
|-----------------------------|----------|
| INTERIOR STREET DEDICATION: | 17.48±AC |
| PHASE I:                    | 8.85±AC  |
| PHASE II:                   | 4.58±AC  |
| PHASE III:                  | 4.05±AC  |
| EXTERIOR STREET DEDICATION: | 4.91±AC  |
| PHASE I:                    | 1.19±AC  |
| PHASE II:                   | 2.46±AC  |
| PHASE III:                  | 1.26±AC  |
| TOTAL STREET DEDICATION:    | 22.39±AC |

|                         |        |
|-------------------------|--------|
| STORM BASIN DEDICATION: | 3.00AC |
| PARK:                   | 3.58AC |

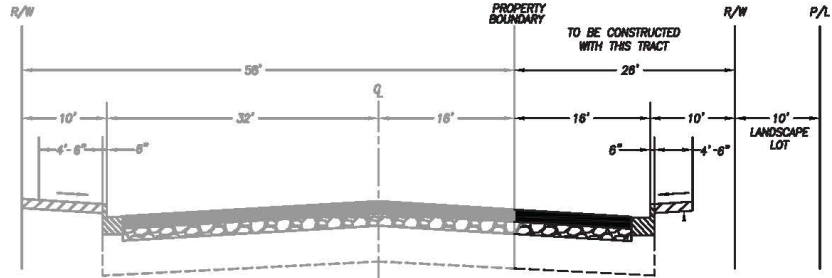
|                             |         |
|-----------------------------|---------|
| LANDSCAPE DEDICATION:       |         |
| PHASE I: LOTS A-C           | 0.28±AC |
| PHASE II: LOTS D-E          | 0.38±AC |
| PHASE III: LOTS F-I         | 0.43±AC |
| TOTAL LANDSCAPE DEDICATION: | 1.09±AC |

NOTES

- DATE OF PREPARATION: MARCH 21, 2024
- GENERAL PLAN DESIGNATION: LOW DENSITY RESIDENTIAL
- CITY ZONING: R-L-5
- ALL DISTANCES SHOWN ARE IN FEET & DECIMALS THEREOF AND ARE APPROXIMATE
- OFFSITE STREETS = 4.91 AC; ONSITE STREETS = 17.48 AC; LOTS = 46.06 AC; PARK & BASIN = 6.58 AC
- EXISTING LAND USE: AG
- PROPOSED LAND USE: SINGLE FAMILY RESIDENTIAL (100% OF SITE)
- NATURAL GAS BY: THE GAS COMPANY
- TELEPHONE BY: AT&T
- POWER BY: SOUTHERN CALIFORNIA EDISON CO
- CABLE T.V. BY: COMCAST
- DOMESTIC WATER BY: CITY OF HANFORD
- SEWAGE DISPOSAL BY: CITY OF HANFORD
- REFUSE COLLECTION BY: CITY OF HANFORD
- DRAINAGE: SITE BASIN
- STORM DRAIN BASIN (PHASE I)

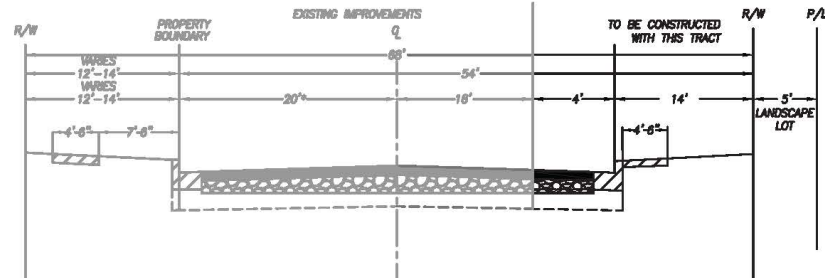
SECTION A-A  
AQUIFER DRIVE

NOT TO SCALE  
PER CITY STD. ST-23 (REVISED)



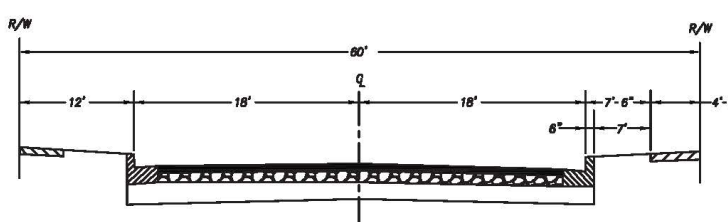
SECTION B-B  
W SPRING CREST DRIVE

NOT TO SCALE  
PER CITY STD. ST-26



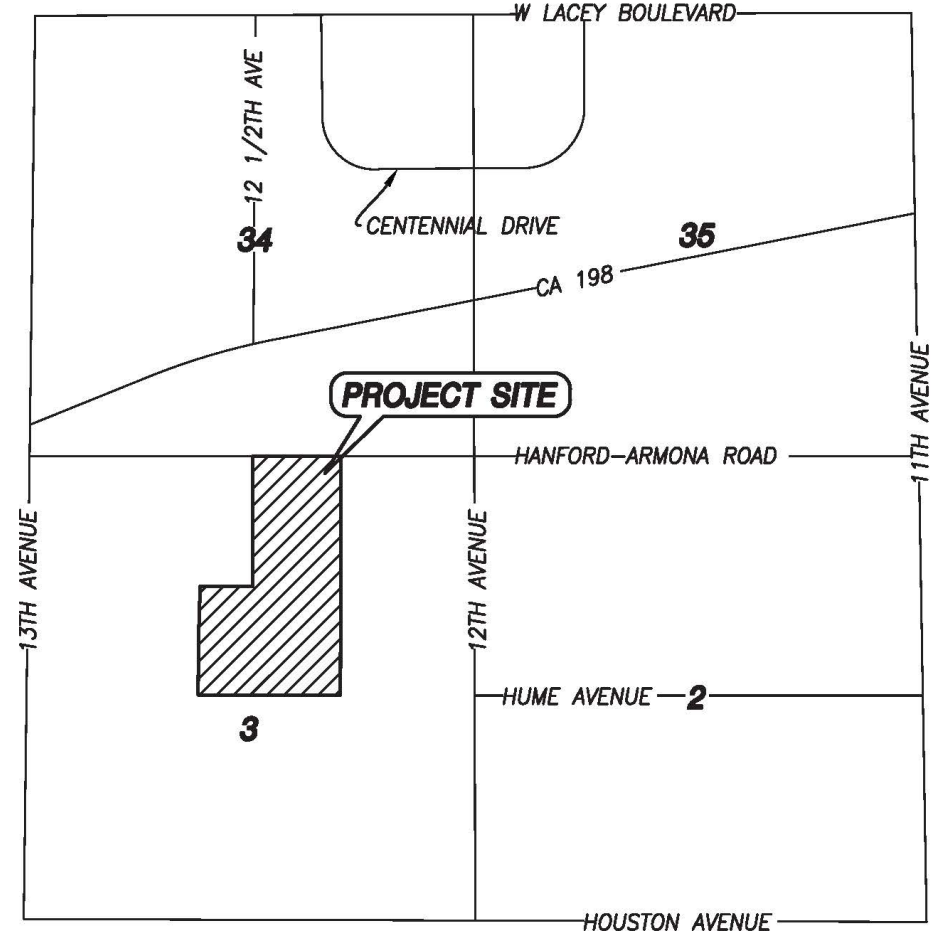
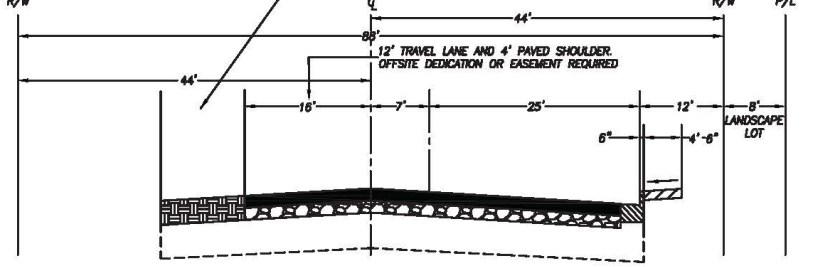
SECTION C-C  
INTERIOR STREETS

NOT TO SCALE  
PER CITY STD. ST-32



SECTION D-D  
HUME AVENUE

NOT TO SCALE  
PER CITY STD. ST-23



LOCATION MAP  
NOT TO SCALE



## Roadway Descriptions

11th Avenue is a north-south arterial in western Hanford. It operates within the study area as a four-lane roadway with a raised median and provides access to residential and commercial land uses and State Route 198 via 3rd and 4th Streets.

12th Avenue is a north-south arterial in western Hanford with an interchange connection to State Route 198. Within the study area, it operates as a four-lane roadway and a raised median and provides access to residential, commercial and agricultural land uses.

13th Avenue is a north-south major arterial in western Hanford that intersects Hanford-Armona Road near State Route 198. It operates within the study area as a two-lane roadway with unpaved shoulders and provides access primarily to residential and agricultural land uses.

Hanford-Armona Road is an east-west arterial with a roundabout intersection with the westbound ramps of State Route 198 near 13th Avenue. Within the study area, it exists as a two-lane roadway at various stages of widening and improvement and provides access to residential, commercial and agricultural land uses.

Hume Avenue is an east-west collector located midway between Houston Avenue and Hanford-Armona Road. Extending east from 12th Avenue, it operates as a two-lane roadway at various stages of widening and improvement and provides access primarily to residential land uses.

State Route 198 is an east-west state highway that extends from the California Central Coast, through the Central Valley to Sequoia National Park. It functions as a major regional and interregional corridor and operates within the study area as a four-lane expressway.

## **PROJECT TRIP GENERATION AND DESIGN HOUR VOLUMES**

The project trip generation volumes shown in Table 1 were estimated using the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition (September 2021). Trip rates and peak hour directional splits for ITE Land Use Code 210 (Single-Family Detached Housing) were used to estimate project trips for weekday peak hour of adjacent street traffic based on information provided by the project applicant.

**Table 1**  
**Project Trip Generation**

| Land Use |                                |                    | Daily Trips |       | AM Peak Hour Trips |                |                 | PM Peak Hour Trips |                |                 |
|----------|--------------------------------|--------------------|-------------|-------|--------------------|----------------|-----------------|--------------------|----------------|-----------------|
| ITE Code | Development Type               | Variable           | ADT Rate    | ADT   | Rate               | IN Split Trips | OUT Split Trips | Rate               | IN Split Trips | OUT Split Trips |
| 210      | Single-Family Detached Housing | 326 Dwelling Units | eq          | 2,993 | eq                 | 26%<br>57      | 74%<br>162      | eq                 | 63%<br>190     | 37%<br>112      |

## **PROJECT TRIP DISTRIBUTION AND ASSIGNMENT**

The distribution of project peak hour trips is shown in Table 2 and represents the movement of traffic accessing the project site by direction. The project trip distribution was developed based on site location and travel patterns anticipated for the proposed land use.

**Table 2**  
**Project Trip Distribution**

| Direction | Percent |
|-----------|---------|
| North     | 40      |
| East      | 35      |
| South     | 5       |
| West      | 20      |

Project peak hour trips were assigned to the study intersections as shown in Figure 4. Project trip assignment was developed based on trip generation, trip distribution and likely travel routes for traffic accessing the project site.

## **EXISTING AND FUTURE TRAFFIC**

### **Existing**

Weekday peak hour turning movement counts were obtained at each of the study intersections in May 2023 (see Appendix for count data). Existing peak hour volumes are shown in Figure 5. Existing plus project peak hour volumes are shown in Figure 6.

### **Future**

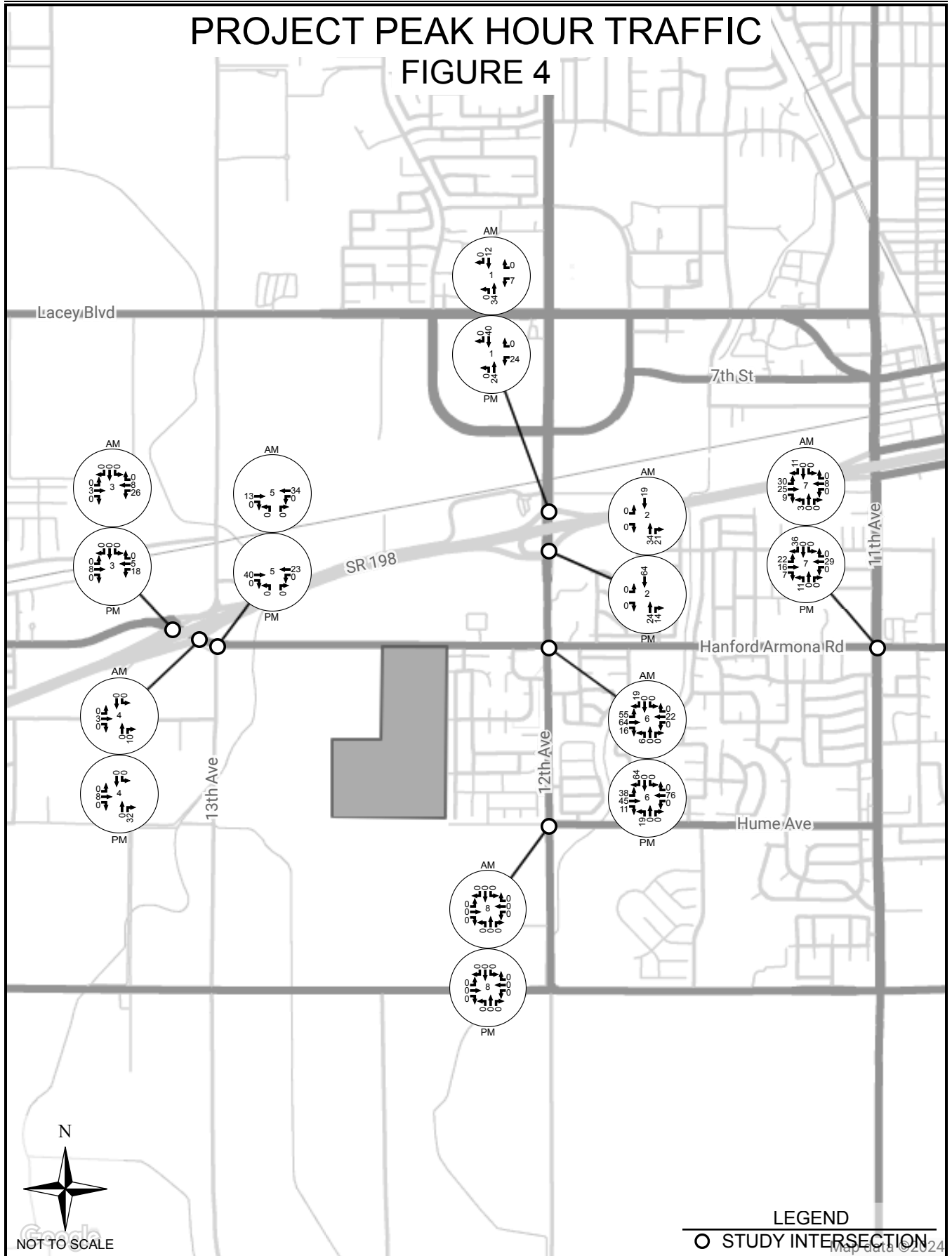
Annual growth rates ranging between 1.10 and 5.03 percent were applied to the existing peak hour volumes to estimate future volumes for the years 2026 (opening year) and 2044 (horizon year). These growth rates were estimated based on a review of data from the Kings County Association of Governments (KCAG) travel demand model.

Future peak hour volumes for the year 2026, both without and with project traffic, are shown in Figures 7 and 8, respectively. These volumes include peak hour trip estimates for two tracts of the Live Oak development, a master-planned community located at the northwest, southwest and southeast quadrants of 12th Avenue and Hume Avenue (see Appendix for trip generation estimates). Both tracts are currently under construction (see Appendix for land use map with tracts outlined in red).

Future peak hour volumes for the year 2044, both without and with project traffic, are shown in Figures 9 and 10, respectively. These volumes include peak hour trip estimates for the Live Oak development at full buildout (see Appendix for trip generation estimates).

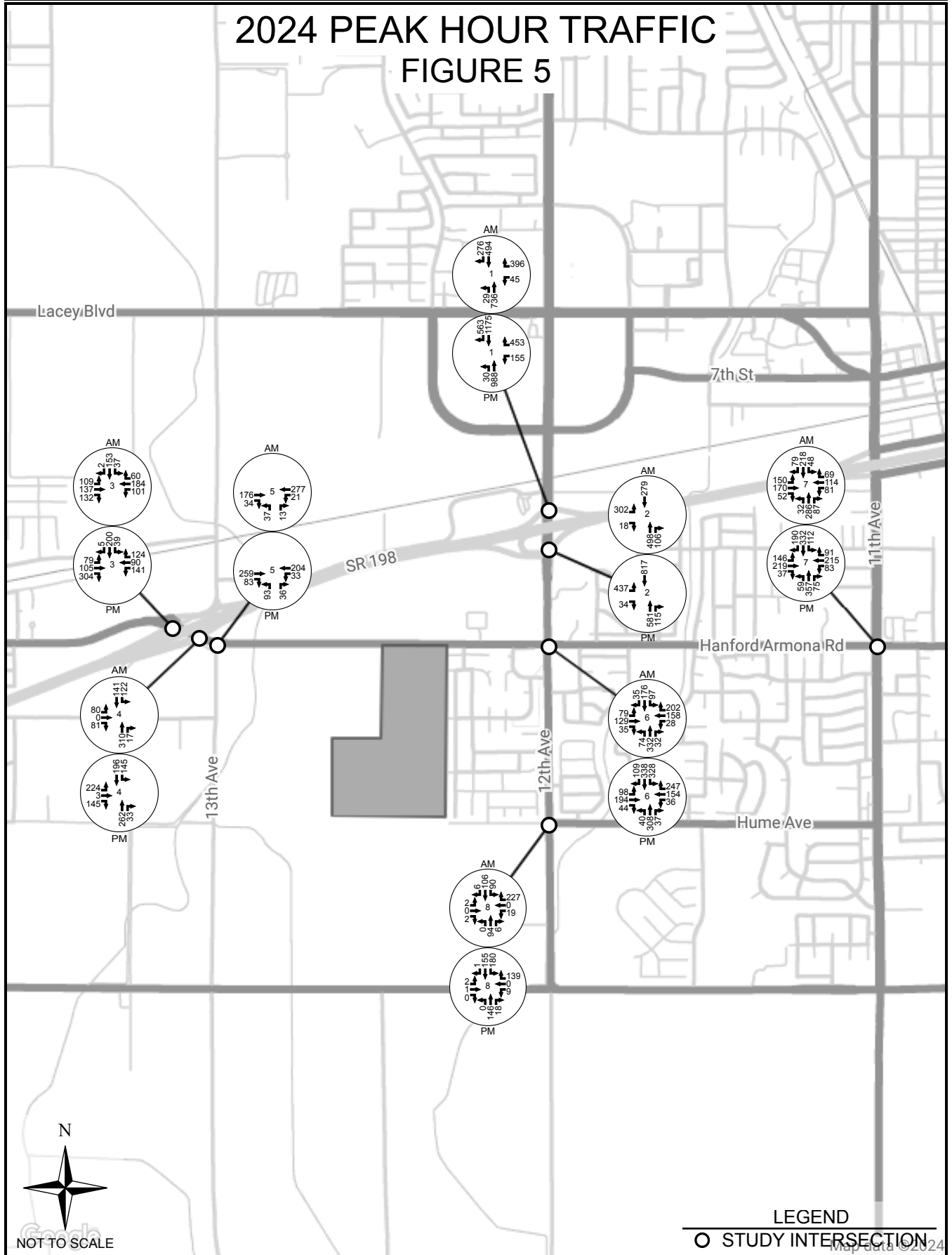


# PROJECT PEAK HOUR TRAFFIC FIGURE 4



Silicon Valley Ranch  
City of Hanford

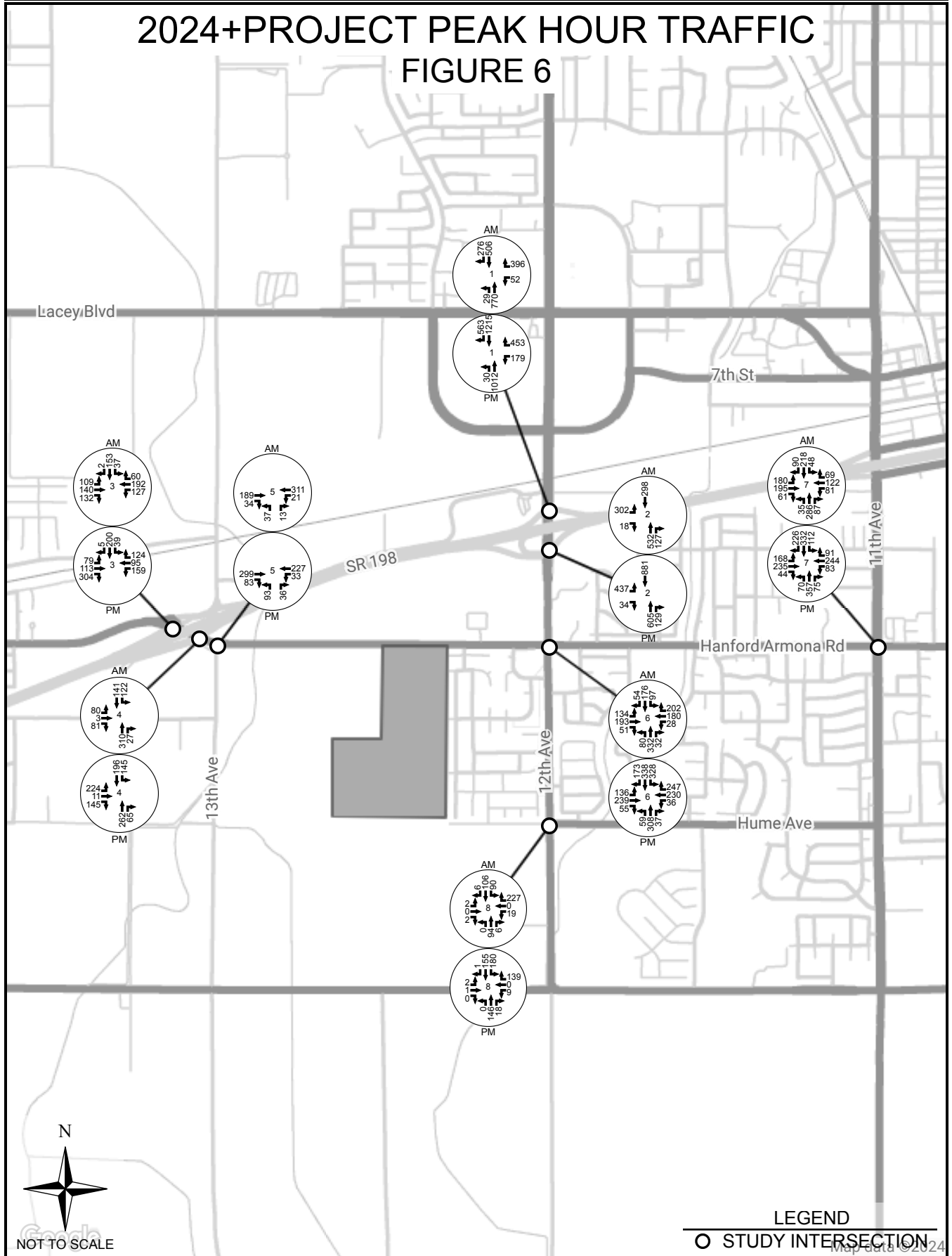
# 2024 PEAK HOUR TRAFFIC FIGURE 5

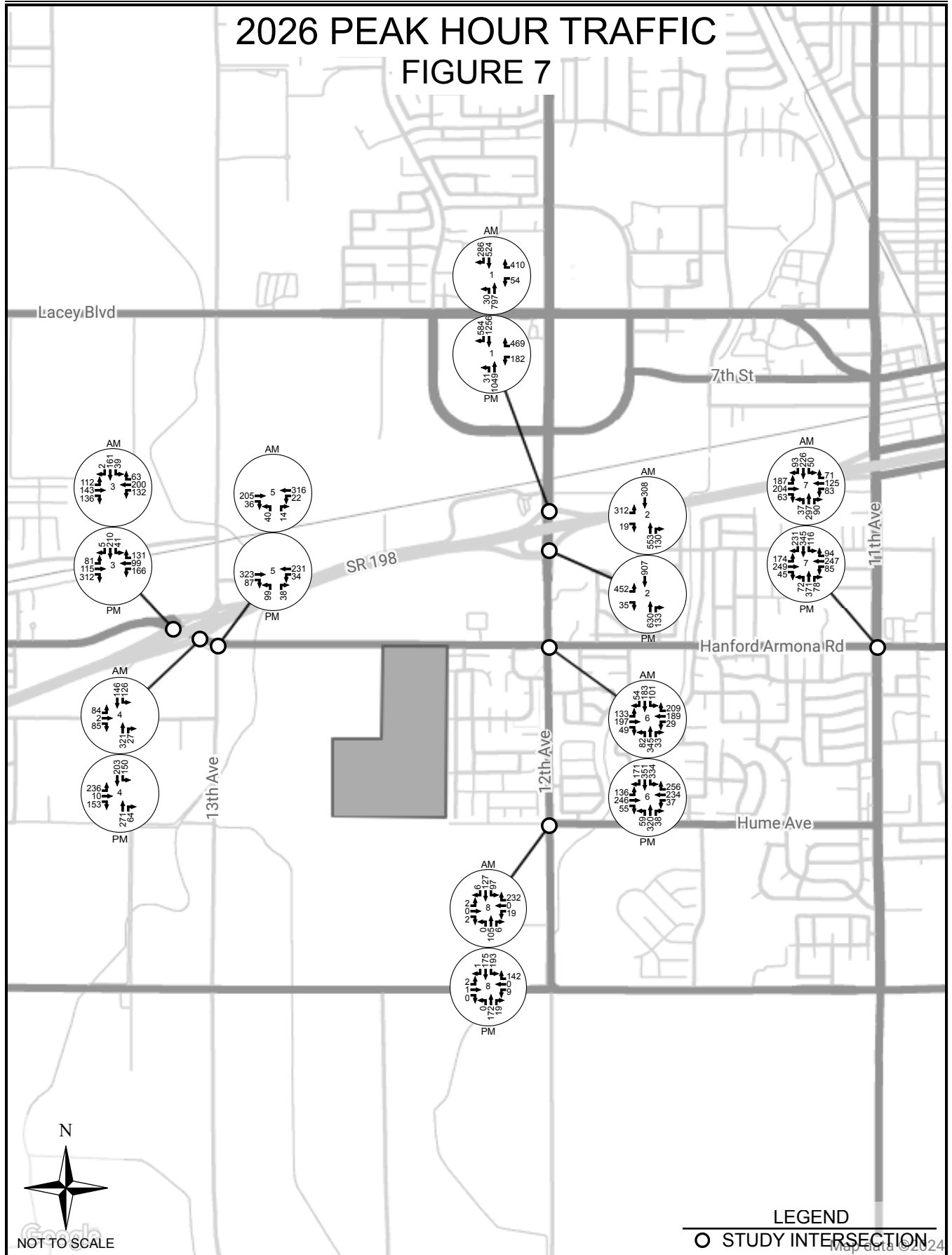


Silicon Valley Ranch  
City of Hanford

# 2024+PROJECT PEAK HOUR TRAFFIC

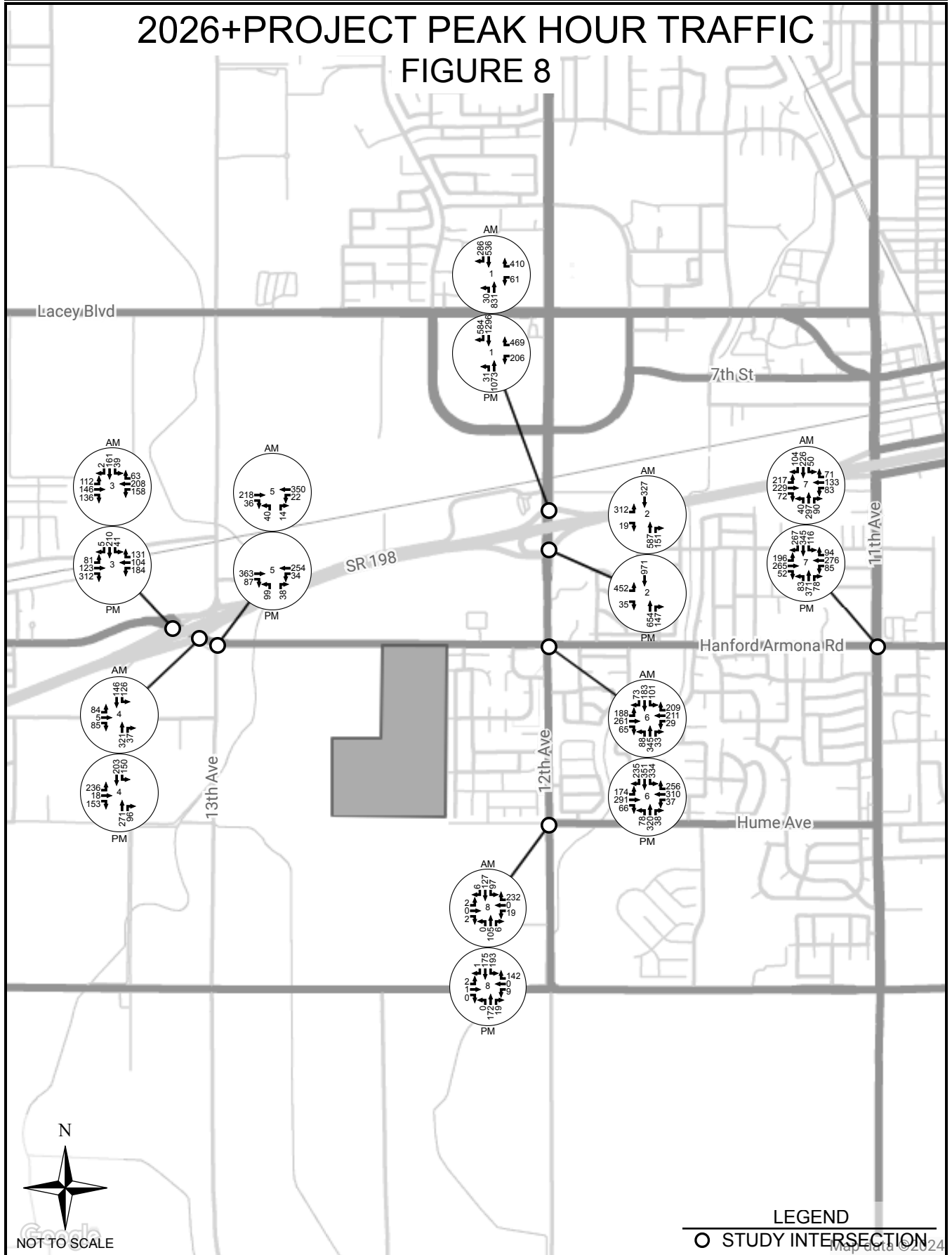
## FIGURE 6

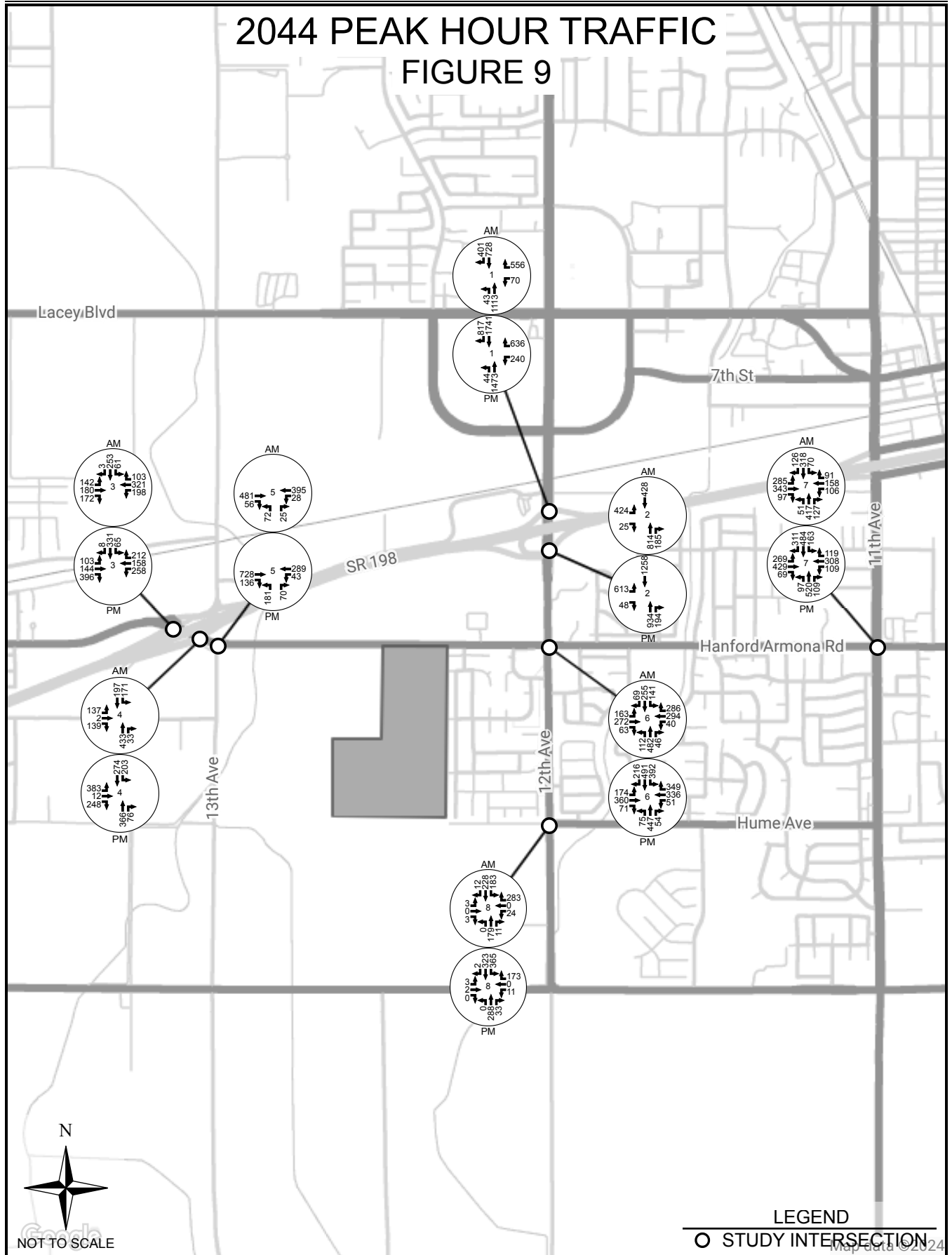




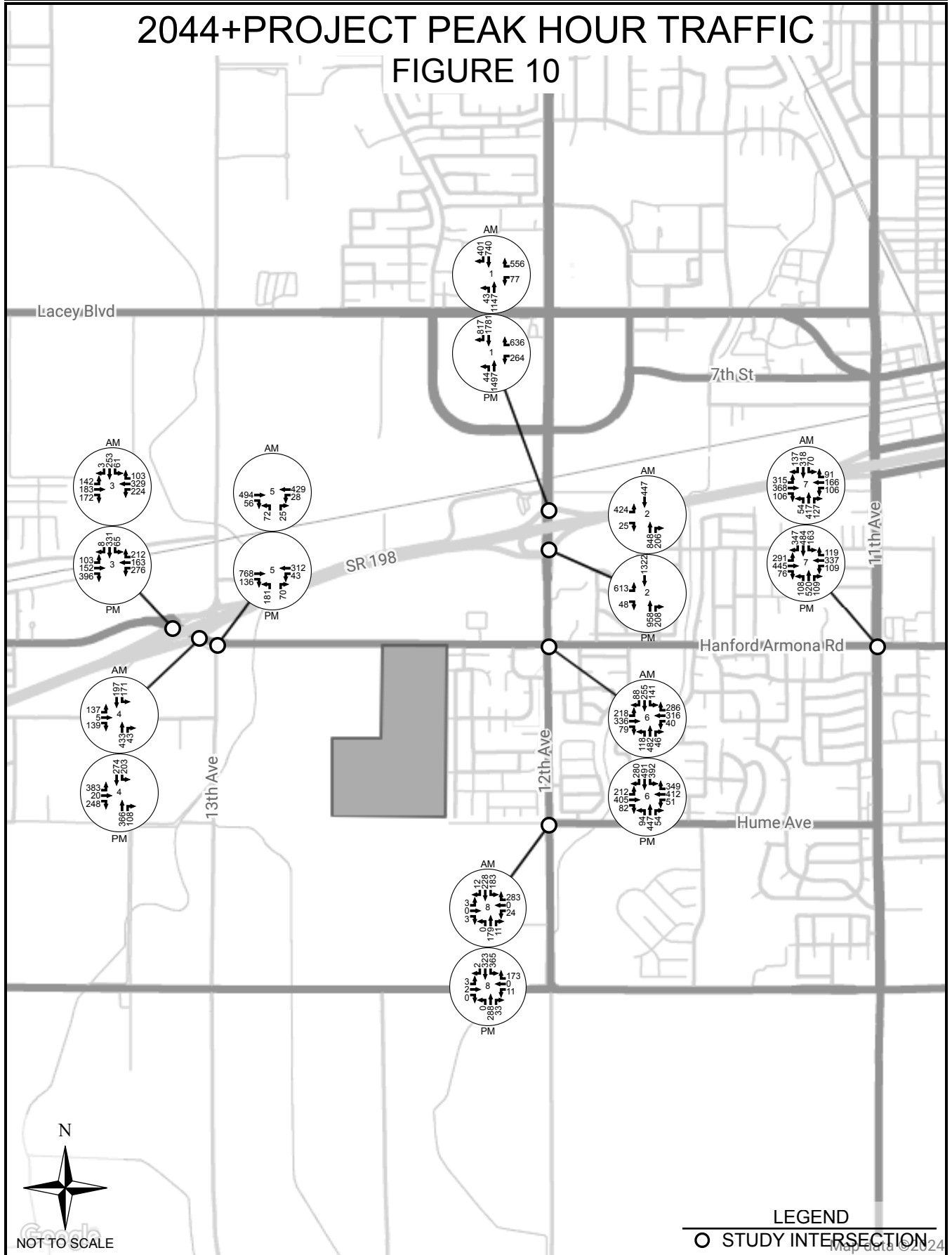
# 2026+PROJECT PEAK HOUR TRAFFIC

## FIGURE 8





# 2044+PROJECT PEAK HOUR TRAFFIC FIGURE 10



Silicon Valley Ranch  
City of Hanford

**RUETTIGERS & SCHULER**  
CIVIL ENGINEERS



## **INTERSECTION ANALYSIS**

A capacity analysis of the study intersections was conducted using Synchro software from Trafficware (see Appendix for Synchro output). This software utilizes the capacity analysis methodology in the Transportation Research Board's *Highway Capacity Manual* (HCM). The analysis was performed for each of the following traffic scenarios.

- Existing Year (2024)
- Existing Year (2024) + Project
- Opening Year (2026)
- Opening Year (2026) + Project
- Future Year (2044)
- Future Year (2044) + Project

Level of service (LOS) criteria for unsignalized and signalized intersections, as defined in HCM, are presented in the tables below.

### **Level of Service Criteria Unsignalized Intersections**

| Level of Service | Average Control Delay<br>(sec/veh) | Expected Delay to Minor<br>Street Traffic |
|------------------|------------------------------------|-------------------------------------------|
| A                | $\leq 10$                          | Little or no delay                        |
| B                | $> 10$ and $\leq 15$               | Short delays                              |
| C                | $> 15$ and $\leq 25$               | Average delays                            |
| D                | $> 25$ and $\leq 35$               | Long delays                               |
| E                | $> 35$ and $\leq 50$               | Very long delays                          |
| F                | $> 50$                             | Extreme delays                            |

### **Level of Service Criteria Signalized Intersections**

| Level of Service | Average Control Delay<br>(sec/veh) | Volume-to-Capacity<br>Ratio |
|------------------|------------------------------------|-----------------------------|
| A                | $\leq 10$                          | $< 0.60$                    |
| B                | $> 10$ and $\leq 20$               | 0.61 - 0.70                 |
| C                | $> 20$ and $\leq 35$               | 0.71 - 0.80                 |
| D                | $> 35$ and $\leq 55$               | 0.81 - 0.90                 |
| E                | $> 55$ and $\leq 80$               | 0.91 - 1.00                 |
| F                | $> 80$                             | $> 1.00$                    |



Peak hour level of service for the study intersections is presented in Tables 3a and 3b. The City of Hanford has set an intersection level of service standard of LOS C or better. Intersection delay (seconds per vehicle) is shown within parentheses for intersections operating below LOS C.

**Table 3a**  
**Intersection Level of Service**  
**Weekday PM Peak Hour**

| # | Intersection                        | Control Type | 2024   | 2024+ Project | 2026   | 2026+ Project | 2044             | 2044+ Project    | 2044+ Project w/Mitigation |
|---|-------------------------------------|--------------|--------|---------------|--------|---------------|------------------|------------------|----------------------------|
| 1 | 12th Ave & SR 198 WB Ramps          | Signal       | B      | B             | C      | B             | C                | C                | -                          |
| 2 | 12th Ave & SR 198 EB Ramps          | Signal       | A      | A             | A      | B             | B                | B                | -                          |
| 3 | SR 198 WB Ramps & Hanford Armona Rd | Roundabout   | A      | A             | A      | A             | B                | B                | -                          |
| 4 | SR 198 EB Ramps & Hanford Armona Rd | NB           | B      | B             | B      | B             | C                | C                | -                          |
| 5 | 13th Ave & Hanford Armona Rd        | NB<br>SB     | C<br>A | C<br>A        | C<br>A | C<br>A        | F<br>(>300)<br>A | F<br>(>300)<br>A | -<br>-                     |
|   |                                     | Signal       | -      | -             | -      | -             | -                | -                | B                          |
| 6 | 12th Ave & Hanford Armona Rd        | Signal       | C      | C             | C      | C             | D<br>(40.9)      | D<br>(42.1)      | C                          |
| 7 | 11th Ave & Hanford Armona Rd        | Signal       | B      | B             | C      | C             | C                | C                | -                          |
| 8 | 12th Ave & Hume Ave                 | WB           | B      | B             | B      | B             | C                | C                | -                          |

**Table 3b**  
**Intersection Level of Service**  
**Weekday AM Peak Hour**

| # | Intersection                        | Control Type | 2024   | 2024+ Project | 2026   | 2026+ Project | 2044             | 2044+ Project    | 2044+ Project w/Mitigation |
|---|-------------------------------------|--------------|--------|---------------|--------|---------------|------------------|------------------|----------------------------|
| 1 | 12th Ave & SR 198 WB Ramps          | Signal       | B      | B             | B      | B             | B                | B                | -                          |
| 2 | 12th Ave & SR 198 EB Ramps          | Signal       | B      | B             | B      | B             | B                | B                | -                          |
| 3 | SR 198 WB Ramps & Hanford Armona Rd | Roundabout   | A      | A             | A      | A             | B                | C                | -                          |
| 4 | SR 198 EB Ramps & Hanford Armona Rd | NB           | B      | B             | B      | B             | C                | C                | -                          |
| 5 | 13th Ave & Hanford Armona Rd        | NB<br>SB     | B<br>A | B<br>A        | B<br>A | C<br>A        | D<br>(31.4)<br>A | F<br>(35.0)<br>A | -<br>-                     |
|   |                                     | Signal       | -      | -             | -      | -             | -                | -                | A                          |
| 6 | 12th Ave & Hanford Armona Rd        | Signal       | C      | C             | C      | C             | C                | C                | C                          |
| 7 | 11th Ave & Hanford Armona Rd        | Signal       | B      | B             | B      | B             | C                | C                | -                          |
| 8 | 12th Ave & Hume Ave                 | WB           | B      | B             | B      | B             | C                | C                | -                          |

## **TRAFFIC SIGNAL WARRANT ANALYSIS**

Peak hour signal warrants were evaluated for the three unsignalized study intersections based on the 2014 *California Manual on Uniform Traffic Control Devices* (2014 CA MUTCD). Peak hour signal warrants assess delay to traffic on minor street approaches when entering or crossing a major street. Signal warrant analysis results are shown in Tables 4a and 4b.

**Table 4a**  
**Traffic Signal Warrants**  
**Weekday PM Peak Hour**

| # | Intersection                         | 2024                            |                                |             | 2024+Project                    |                                |             | 2026                            |                                |             |
|---|--------------------------------------|---------------------------------|--------------------------------|-------------|---------------------------------|--------------------------------|-------------|---------------------------------|--------------------------------|-------------|
|   |                                      | Major Street Total Approach Vol | Minor Street High Approach Vol | Warrant Met | Major Street Total Approach Vol | Minor Street High Approach Vol | Warrant Met | Major Street Total Approach Vol | Minor Street High Approach Vol | Warrant Met |
| 4 | SR 198 EB Ramps at Hanford Armona Rd | 636                             | 372                            | NO          | 668                             | 380                            | NO          | 672                             | 385                            | NO          |
| 5 | 13th Ave at Hanford Armona Rd        | 580                             | 129                            | NO          | 622                             | 129                            | NO          | 676                             | 137                            | NO          |
| 8 | 12th Ave at Hume Ave                 | 500                             | 148                            | NO          | 500                             | 148                            | NO          | 509                             | 156                            | NO          |

| # | Intersection                         | 2026+Project                    |                                |             | 2044                            |                                |             | 2044+Project                    |                                |             |
|---|--------------------------------------|---------------------------------|--------------------------------|-------------|---------------------------------|--------------------------------|-------------|---------------------------------|--------------------------------|-------------|
|   |                                      | Major Street Total Approach Vol | Minor Street High Approach Vol | Warrant Met | Major Street Total Approach Vol | Minor Street High Approach Vol | Warrant Met | Major Street Total Approach Vol | Minor Street High Approach Vol | Warrant Met |
| 4 | SR 198 EB Ramps at Hanford Armona Rd | 292                             | 389                            | NO          | 889                             | 636                            | NO          | 921                             | 644                            | NO          |
| 5 | 13th Ave at Hanford Armona Rd        | 729                             | 137                            | YES         | 1399                            | 251                            | YES         | 1432                            | 251                            | YES         |
| 8 | 12th Ave at Hume Ave                 | 542                             | 161                            | NO          | 985                             | 184                            | NO          | 985                             | 184                            | NO          |

**Table 4b**  
**Traffic Signal Warrants**  
**Weekday AM Peak Hour**

| # | Intersection                         | 2024                            |                                |             | 2024+Project                    |                                |             | 2026                            |                                |             |
|---|--------------------------------------|---------------------------------|--------------------------------|-------------|---------------------------------|--------------------------------|-------------|---------------------------------|--------------------------------|-------------|
|   |                                      | Major Street Total Approach Vol | Minor Street High Approach Vol | Warrant Met | Major Street Total Approach Vol | Minor Street High Approach Vol | Warrant Met | Major Street Total Approach Vol | Minor Street High Approach Vol | Warrant Met |
| 4 | SR 198 EB Ramps at Hanford Armona Rd | 590                             | 161                            | NO          | 600                             | 164                            | NO          | 610                             | 172                            | NO          |
| 5 | 13th Ave at Hanford Armona Rd        | 523                             | 50                             | NO          | 561                             | 50                             | NO          | 594                             | 54                             | NO          |
| 8 | 12th Ave at Hume Ave                 | 302                             | 246                            | NO          | 302                             | 246                            | NO          | 315                             | 256                            | NO          |

| # | Intersection                         | 2026+Project                    |                                |             | 2044                            |                                |             | 2044+Project                    |                                |             |
|---|--------------------------------------|---------------------------------|--------------------------------|-------------|---------------------------------|--------------------------------|-------------|---------------------------------|--------------------------------|-------------|
|   |                                      | Major Street Total Approach Vol | Minor Street High Approach Vol | Warrant Met | Major Street Total Approach Vol | Minor Street High Approach Vol | Warrant Met | Major Street Total Approach Vol | Minor Street High Approach Vol | Warrant Met |
| 4 | SR 198 EB Ramps at Hanford Armona Rd | 615                             | 180                            | NO          | 825                             | 276                            | NO          | 835                             | 279                            | NO          |
| 5 | 13th Ave at Hanford Armona Rd        | 629                             | 54                             | NO          | 1113                            | 97                             | YES         | 1143                            | 97                             | YES         |
| 8 | 12th Ave at Hume Ave                 | 321                             | 261                            | NO          | 595                             | 307                            | NO          | 595                             | 307                            | NO          |

It is important to note that a signal warrant defines the minimum condition under which signalization of an intersection might be warranted. Meeting this threshold does not suggest traffic signals are required, but rather, that other traffic factors and conditions be considered to determine whether signals are truly justified.

It is also noted that signal warrants do not necessarily correlate with level of service. An intersection may satisfy a signal warrant condition and operate at or above an acceptable level of service or operate below an acceptable level of service and not meet signal warrant criteria.

## **ROADWAY ANALYSIS**

A capacity analysis of study roadways was conducted using Highway Capacity Software (HCS) from the McTrans Center at the University of Florida. This software utilizes the capacity analysis methodology presented in the Transportation Research Board's *Highway Capacity Manual*.

Peak hour roadway capacities are presented in Table 5. The City of Hanford has a minimum level of service standard of LOS C for roadway segments.

**Table 5**  
**Roadway Capacity**

| Roadway Segment                                          | 2024<br>Directional LOS |                 | 2024+Project<br>Directional LOS |                 | 2026<br>Directional LOS |                 | 2026+Project<br>Directional LOS |                 |
|----------------------------------------------------------|-------------------------|-----------------|---------------------------------|-----------------|-------------------------|-----------------|---------------------------------|-----------------|
|                                                          | N or E<br>AM/PM         | S or W<br>AM/PM | N or E<br>AM/PM                 | S or W<br>AM/PM | N or E<br>AM/PM         | S or W<br>AM/PM | N or E<br>AM/PM                 | S or W<br>AM/PM |
| Hanford Armona Rd:<br>SR 198 WB Ramps to SR 198 EB Ramps | B/B                     | B/B             | B/B                             | B/B             | B/B                     | B/B             | B/B                             | B/B             |
| Hanford Armona Rd:<br>SR 198 EB Ramps to 13th Ave        | B/B                     | B/B             | B/B                             | B/B             | B/B                     | B/B             | B/B                             | B/B             |
| Hanford Armona Rd:<br>13th Ave to 12th Ave               | B/B                     | B/B             | B/B                             | B/B             | B/B                     | B/B             | B/B                             | B/B             |
| Hanford Armona Rd: □<br>12th Ave to 11th Ave             | B/B                     | B/B             | B/B                             | B/B             | B/B                     | B/B             | B/B                             | B/B             |
| 12th Ave:<br>Hume Ave to Hanford Armona Rd               | A/A                     | A/A             | A/A                             | A/A             | A/A                     | A/A             | A/A                             | A/A             |
| 12th Ave:<br>Hanford Armona Rd to SR 198 EB Ramps        | A/A                     | A/A             | A/A                             | A/A             | B/B                     | B/B             | B/B                             | B/B             |
| 12th Ave:<br>SR 198 EB Ramps to SR 198 WB Ramps          | A/A                     | A/A             | A/A                             | A/A             | B/B                     | B/B             | B/B                             | B/B             |

| Roadway Segment                                          | 2044<br>Directional LOS |                 | 2044+Project<br>Directional LOS |                 |
|----------------------------------------------------------|-------------------------|-----------------|---------------------------------|-----------------|
|                                                          | N or E<br>AM/PM         | S or W<br>AM/PM | N or E<br>AM/PM                 | S or W<br>AM/PM |
| Hanford Armona Rd:<br>SR 198 WB Ramps to SR 198 EB Ramps | B/B                     | C/C             | B/B                             | C/C             |
| Hanford Armona Rd:<br>SR 198 EB Ramps to 13th Ave        | B/B                     | C/C             | B/B                             | C/C             |
| Hanford Armona Rd:<br>13th Ave to 12th Ave               | C/C                     | C/C             | C/C                             | C/C             |
| Hanford Armona Rd: □<br>12th Ave to 11th Ave             | C/C                     | C/C             | C/C                             | C/C             |
| 12th Ave:<br>Hume Ave to Hanford Armona Rd               | A/A                     | A/A             | A/A                             | A/A             |
| 12th Ave:<br>Hanford Armona Rd to SR 198 EB Ramps        | B/B                     | B/B             | B/B                             | B/B             |
| 12th Ave:<br>SR 198 EB Ramps to SR 198 WB Ramps          | B/B                     | B/B             | B/B                             | B/B             |

**MITIGATION**

Intersection improvements needed by the year 2044 to maintain or improve the operational level of service of the street system in the vicinity of the project are presented in Table 6.

**Table 6**  
**Intersection Improvements**

| # | Intersection                    | Total Improvements<br>Required by 2044 | Project Share |
|---|---------------------------------|----------------------------------------|---------------|
| 5 | 13th Ave &<br>Hanford Armona Rd | Install Traffic Signal                 | -             |
| 6 | 12th Ave &<br>Hanford Armona Rd | Change EBR to EBTR                     | 18.94%        |

The project's fair share cost for needed improvements was calculated using the formula below and approach peak hour volumes.

$$\% \text{ Share} = \frac{\text{Project Traffic}}{(\text{Future} + \text{Project Traffic}) - \text{Existing Traffic}} \times 100$$

## **VMT ANALYSIS**

An analysis of project VMT (vehicle miles traveled) was conducted in accordance with the *VMT Thresholds and Implementation Guidelines*, City of Hanford, dated November 2022 (VMT Guidelines). The analysis involved comparing an estimate of VMT attributable to the project to a threshold VMT and assessing whether project VMT would result in a significant transportation impact under the California Environmental Quality Act (CEQA).

### **Project Screening**

Land use developments meeting one or more of the screening criteria contained in the VMT Guidelines are presumed to create a less than significant transportation impact and no further VMT analysis is required. These criteria relate to project type, size, location, proximity to transit, and trip-making potential. The project does not meet any of the screening criteria. Therefore, a detailed VMT analysis is required.

### **Detailed Analysis**

The detailed VMT analysis was conducted by LSA Associates, Inc. (Riverside, California) using the KCAG travel demand model. VMT analysis results are presented in Table 7 (see Appendix for VMT analysis memorandum).

**Table 7**  
**VMT Analysis Results**

| Land Use    | Daily Vehicle Miles Traveled (VMT) |          |           |         | Significant Impact | Reduction Needed |
|-------------|------------------------------------|----------|-----------|---------|--------------------|------------------|
|             | Metric                             | Baseline | Threshold | Project |                    |                  |
| Residential | VMT per Capita                     | 10.33    | 8.99      | 9.61    | YES                | 6.5%             |

Source: LSA Associates, Inc. memorandum, dated March 3, 2023

Since the project's VMT per capita (9.61) is greater than the significance threshold (8.99), the project is expected to result in a significant transportation impact under CEQA. Therefore, mitigation would be required.

## Mitigation

For land development projects, VMT mitigation focuses on measures that reduce the number and/or length of single-occupant vehicle trips generated by the project. According to the VMT Guidelines, proposed mitigation to reduce project VMT “must be supported by substantial evidence illustrating that the measure(s) will mitigate VMT impacts to less than significant.”

The VMT Guidelines cite the *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health Equity: Designed for Local Governments, Communities, and Project Developers*, California Air Pollution Control Officers Association, December 2021 (CAPCOA Handbook) as a source for mitigation measures with quantitative methods for estimating VMT reduction. Below are quantitative measures contained in the CAPCOA Handbook for residential projects in suburban areas. Measure identifiers are shown within parentheses and italicized text addresses the applicability of each measure to the project.

- Increase residential density to a level higher than the national average (T-1)

*Applicable, but not feasible. The residential density for the project is 6.5 dwelling units/acre (326 single-family homes/50 acres of developable land). As stated in the CAPCOA Handbook, the national average is 9.1 dwelling units/acre and includes apartments, townhomes and condominiums in addition to detached single-family housing.*

*Below is the VMT reduction formula in the CAPCOA Handbook for this measure (-0.22 = VMT elasticity factor).*

$$VMT\ reduction = [ (project\ du/acre - 9.1\ du/acre) / 9.1\ du/acre ] \times (-0.22)$$

*Assuming no change in the amount of developable land, the project would need at least 455 dwelling units to reach the national average and be credited for any reduction in project VMT. Moreover, the project would require a total of 590 dwelling units to mitigate the impact of project VMT to a less than significant level. Such an increase in project residential density (approximately 80 percent) would not be feasible.*



- Provide easy access to high-quality public transit (T-3)

*Not applicable because the project does not meet implementation requirements. Project must be located within 0.5 miles of a high frequency transit station (either rail or bus rapid transit with headways of less than 15 minutes).*

- Integrate affordable and below market rate housing (T-4)

*Not applicable because the project does not meet implementation requirements. Project must be a multifamily residential development permanently dedicated as affordable housing for lower income families.*

- Provide electric vehicle charging infrastructure (T-14)

*Not applicable to single-family residential projects. Mitigation potential available only to developments with buildings that have designated parking areas (e.g., commercial, educational, retail and multifamily housing).*

- Limit residential parking supply (T-15)

*Not applicable because the measure is ineffective in locations where unrestricted street parking or other off-street parking is available and has adequate capacity to accommodate project-related vehicle parking demand.*

- Unbundle residential parking costs from property costs (T-16)

*Not applicable since there are no residential parking costs associated with the project.*

## **SUMMARY**

This study evaluated the potential traffic impacts of Silicon Valley Ranch, a proposed 324 single-family residential development located on the south side of Hanford Armona Road, between 13th Avenue and 12th Avenue, in the City of Hanford.

The scope of the study includes eight intersections and adjoining roadway segments. Traffic impact analyses include intersection level of service (LOS), roadway capacity and vehicle miles traveled (VMT). Traffic signal warrants were also analyzed. Analysis results are summarized below.

### **Intersection Level of Service**

All study intersections are expected to operate with minimal delay (at or above LOS C) during peak hours through the year 2044, both with and without project traffic, or can be mitigated to operate at an acceptable level of service.

### **Traffic Signal Warrants**

Peak hour signal warrants were applied to the three unsignalized study intersections. Signal warrant criteria were met for the following intersection for the peak hours and analysis scenarios indicated.

13th Ave/Hanford Armona Rd

|              |                                     |
|--------------|-------------------------------------|
| PM peak hour | 2026+Project, 2044 and 2044+Project |
| AM peak hour | 2044 and 2044+Project               |

### **Roadway Capacity**

All roadway segments within the scope of the study are expected to operate with minimal delay (at or above LOS C) during peak hours through the year 2044, both with and without project traffic.

### **VMT**

The project's VMT is greater than the significance threshold. Therefore, the project is expected to result in a significant transportation impact under CEQA and mitigation would be required.

**REFERENCES**

1. *California Manual on Uniform Traffic Control Devices for Streets and Highways*, 2014 Edition, California Department of Transportation (Caltrans)
2. *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health Equity: Designed for Local Governments, Communities, and Project Developers*, California Air Pollution Control Officers Association, December 2021
3. *Highway Capacity Manual*, Transportation Research Board
4. *Trip Generation Manual*, 11th Edition, Institute of Transportation Engineers (ITE), September 2021
5. *VMT Thresholds and Implementation Guidelines*, City of Hanford, dated November 2022

## APPENDIX



Metro Traffic Data Inc.  
310 N. Irwin Street - Suite 20  
Hanford, CA 93230  
800-975-6938 Phone/Fax  
www.metrotrafficdata.com

# Turning Movement Report

Prepared For:

Ruettgers & Schuler Civil Engineers  
1800 30th St, Ste 260  
Bakersfield, CA 93301

LOCATION 12th Ave @ SR 198 WB Ramps

LATITUDE 36.3194

COUNTY Kings

LONGITUDE -119.6730

COLLECTION DATE Thursday, May 04, 2023

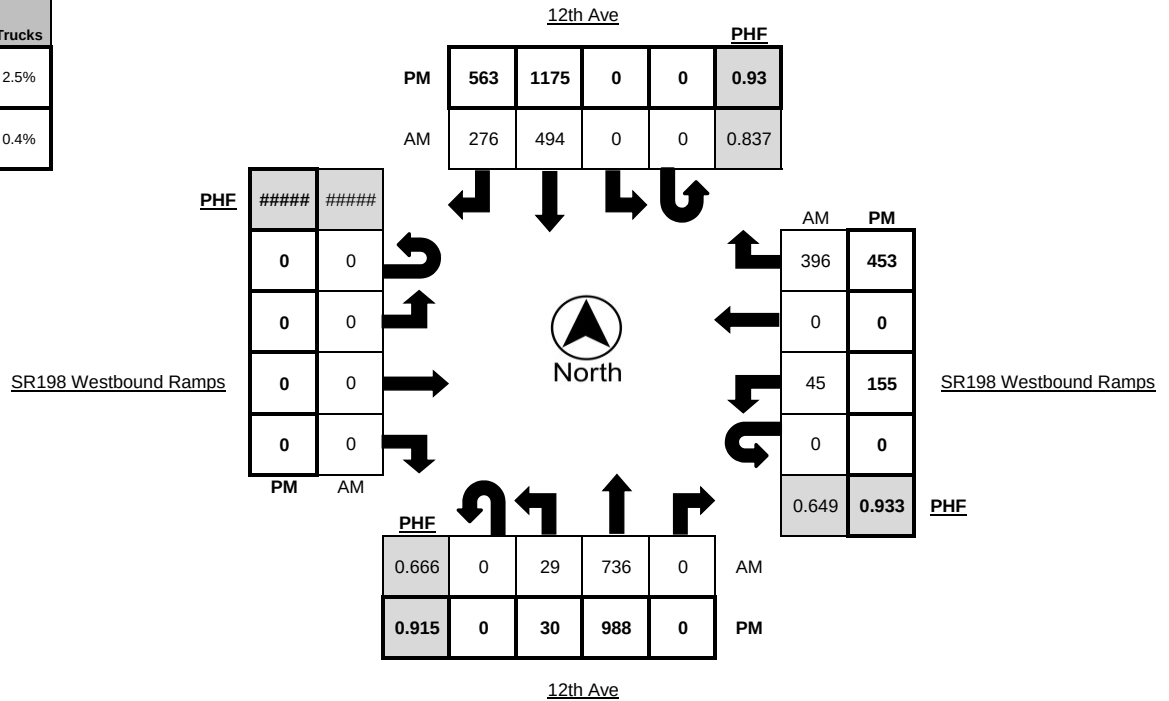
WEATHER Clear

| Time              | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 6:00 AM - 6:15 AM | 0          | 3    | 52   | 0     | 0      | 0          | 0    | 67   | 44    | 4      | 0         | 0    | 0    | 0     | 0      | 0         | 7    | 0    | 41    | 1      |
| 6:15 AM - 6:30 AM | 0          | 11   | 50   | 0     | 0      | 0          | 0    | 45   | 29    | 2      | 0         | 0    | 0    | 0     | 0      | 0         | 10   | 0    | 44    | 3      |
| 6:30 AM - 6:45 AM | 0          | 11   | 55   | 0     | 0      | 0          | 0    | 70   | 46    | 3      | 0         | 0    | 0    | 0     | 0      | 0         | 13   | 0    | 49    | 2      |
| 6:45 AM - 7:00 AM | 0          | 3    | 110  | 0     | 0      | 0          | 0    | 89   | 39    | 0      | 0         | 0    | 0    | 0     | 0      | 0         | 16   | 0    | 83    | 4      |
| 7:00 AM - 7:15 AM | 0          | 8    | 85   | 0     | 1      | 0          | 0    | 86   | 65    | 2      | 0         | 0    | 0    | 0     | 0      | 0         | 8    | 0    | 77    | 5      |
| 7:15 AM - 7:30 AM | 0          | 5    | 151  | 0     | 4      | 0          | 0    | 120  | 69    | 4      | 0         | 0    | 0    | 0     | 0      | 0         | 10   | 0    | 65    | 6      |
| 7:30 AM - 7:45 AM | 0          | 9    | 220  | 0     | 5      | 0          | 0    | 144  | 86    | 8      | 0         | 0    | 0    | 0     | 0      | 0         | 8    | 0    | 103   | 2      |
| 7:45 AM - 8:00 AM | 0          | 7    | 280  | 0     | 1      | 0          | 0    | 144  | 56    | 8      | 0         | 0    | 0    | 0     | 0      | 0         | 19   | 0    | 151   | 4      |
| TOTAL             | 0          | 57   | 1003 | 0     | 11     | 0          | 0    | 765  | 434   | 31     | 0         | 0    | 0    | 0     | 0      | 0         | 91   | 0    | 613   | 27     |

| Time              | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 4:00 PM - 4:15 PM | 0          | 8    | 223  | 0     | 1      | 0          | 0    | 237  | 132   | 3      | 0         | 0    | 0    | 0     | 0      | 0         | 28   | 0    | 112   | 3      |
| 4:15 PM - 4:30 PM | 0          | 12   | 260  | 0     | 2      | 0          | 0    | 245  | 134   | 5      | 0         | 0    | 0    | 0     | 0      | 0         | 39   | 0    | 106   | 2      |
| 4:30 PM - 4:45 PM | 0          | 7    | 237  | 0     | 0      | 0          | 0    | 304  | 131   | 1      | 0         | 0    | 0    | 0     | 0      | 0         | 37   | 0    | 105   | 0      |
| 4:45 PM - 5:00 PM | 0          | 11   | 267  | 0     | 0      | 0          | 0    | 282  | 134   | 4      | 0         | 0    | 0    | 0     | 0      | 0         | 33   | 0    | 130   | 1      |
| 5:00 PM - 5:15 PM | 0          | 8    | 243  | 0     | 2      | 0          | 0    | 311  | 156   | 4      | 0         | 0    | 0    | 0     | 0      | 0         | 35   | 0    | 110   | 1      |
| 5:15 PM - 5:30 PM | 0          | 4    | 241  | 0     | 1      | 0          | 0    | 278  | 142   | 0      | 0         | 0    | 0    | 0     | 0      | 0         | 50   | 0    | 108   | 0      |
| 5:30 PM - 5:45 PM | 0          | 13   | 224  | 0     | 0      | 0          | 0    | 277  | 107   | 1      | 0         | 0    | 0    | 0     | 0      | 0         | 23   | 0    | 96    | 0      |
| 5:45 PM - 6:00 PM | 0          | 11   | 213  | 0     | 0      | 0          | 0    | 218  | 125   | 0      | 0         | 0    | 0    | 0     | 0      | 0         | 32   | 0    | 90    | 0      |
| TOTAL             | 0          | 74   | 1908 | 0     | 6      | 0          | 0    | 2152 | 1061  | 18     | 0         | 0    | 0    | 0     | 0      | 0         | 277  | 0    | 857   | 7      |

| PEAK HOUR         | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 7:00 AM - 8:00 AM | 0          | 29   | 736  | 0     | 11     | 0          | 0    | 494  | 276   | 22     | 0         | 0    | 0    | 0     | 0      | 0         | 45   | 0    | 396   | 17     |
| 4:30 PM - 5:30 PM | 0          | 30   | 988  | 0     | 3      | 0          | 0    | 1175 | 563   | 9      | 0         | 0    | 0    | 0     | 0      | 0         | 155  | 0    | 453   | 2      |

|    | PHF   | Trucks |
|----|-------|--------|
| AM | 0.752 | 2.5%   |
| PM | 0.975 | 0.4%   |



# Turning Movement Report

Prepared For: **Ruettgers & Schuler Civil Engineers**  
1800 30th St, Ste 260  
Bakersfield, CA 93301

|                 |                           |
|-----------------|---------------------------|
| LOCATION        | 12th Ave @ SR198 EB Ramps |
| COUNTY          | Kings                     |
| COLLECTION DATE | Thursday, May 04, 2023    |

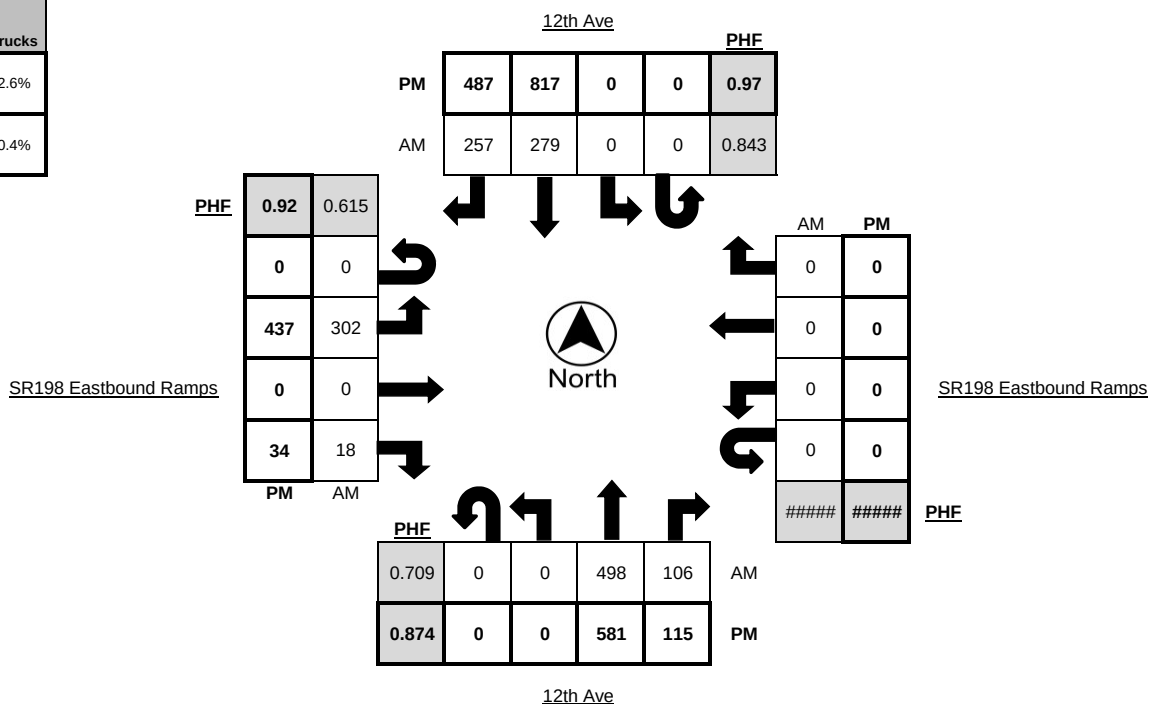
|           |           |
|-----------|-----------|
| LATITUDE  | 36.3174   |
| LONGITUDE | -119.6730 |
| WEATHER   | Clear     |

|                   | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
| Time              | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 6:00 AM - 6:15 AM | 0          | 0    | 36   | 19    | 0      | 0          | 0    | 35   | 42    | 4      | 0         | 18   | 0    | 0     | 0      | 0         | 0    | 0    | 0     | 0      |
| 6:15 AM - 6:30 AM | 0          | 0    | 40   | 12    | 0      | 0          | 0    | 28   | 30    | 2      | 0         | 22   | 0    | 2     | 0      | 0         | 0    | 0    | 0     | 0      |
| 6:30 AM - 6:45 AM | 0          | 0    | 39   | 26    | 0      | 0          | 0    | 40   | 49    | 6      | 0         | 28   | 0    | 0     | 0      | 0         | 0    | 0    | 0     | 0      |
| 6:45 AM - 7:00 AM | 0          | 0    | 55   | 25    | 4      | 0          | 0    | 63   | 46    | 1      | 0         | 59   | 0    | 4     | 2      | 0         | 0    | 0    | 0     | 0      |
| 7:00 AM - 7:15 AM | 0          | 0    | 64   | 18    | 1      | 0          | 0    | 40   | 56    | 3      | 0         | 31   | 0    | 4     | 0      | 0         | 0    | 0    | 0     | 0      |
| 7:15 AM - 7:30 AM | 0          | 0    | 104  | 31    | 3      | 0          | 0    | 66   | 61    | 7      | 0         | 59   | 0    | 4     | 0      | 0         | 0    | 0    | 0     | 0      |
| 7:30 AM - 7:45 AM | 0          | 0    | 151  | 23    | 4      | 0          | 0    | 76   | 78    | 8      | 0         | 86   | 0    | 6     | 2      | 0         | 0    | 0    | 0     | 0      |
| 7:45 AM - 8:00 AM | 0          | 0    | 179  | 34    | 1      | 0          | 0    | 97   | 62    | 9      | 0         | 126  | 0    | 4     | 0      | 0         | 0    | 0    | 0     | 0      |
| TOTAL             | 0          | 0    | 668  | 188   | 13     | 0          | 0    | 445  | 424   | 40     | 0         | 429  | 0    | 24    | 4      | 0         | 0    | 0    | 0     | 0      |

|                   | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
| Time              | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 4:00 PM - 4:15 PM | 0          | 0    | 136  | 25    | 1      | 0          | 0    | 159  | 101   | 3      | 0         | 102  | 0    | 7     | 0      | 0         | 0    | 0    | 0     | 0      |
| 4:15 PM - 4:30 PM | 0          | 0    | 142  | 28    | 0      | 0          | 0    | 188  | 83    | 6      | 0         | 134  | 0    | 9     | 2      | 0         | 0    | 0    | 0     | 0      |
| 4:30 PM - 4:45 PM | 0          | 0    | 148  | 27    | 1      | 0          | 0    | 204  | 132   | 1      | 0         | 102  | 0    | 12    | 0      | 0         | 0    | 0    | 0     | 0      |
| 4:45 PM - 5:00 PM | 0          | 0    | 164  | 35    | 1      | 0          | 0    | 195  | 109   | 3      | 0         | 118  | 0    | 9     | 0      | 0         | 0    | 0    | 0     | 0      |
| 5:00 PM - 5:15 PM | 0          | 0    | 142  | 24    | 2      | 0          | 0    | 201  | 127   | 0      | 0         | 96   | 0    | 6     | 1      | 0         | 0    | 0    | 0     | 0      |
| 5:15 PM - 5:30 PM | 0          | 0    | 127  | 29    | 1      | 0          | 0    | 217  | 119   | 0      | 0         | 121  | 0    | 7     | 0      | 0         | 0    | 0    | 0     | 0      |
| 5:30 PM - 5:45 PM | 0          | 0    | 139  | 35    | 1      | 0          | 0    | 184  | 125   | 1      | 0         | 118  | 0    | 7     | 0      | 0         | 0    | 0    | 0     | 0      |
| 5:45 PM - 6:00 PM | 0          | 0    | 131  | 22    | 1      | 0          | 0    | 169  | 85    | 0      | 0         | 91   | 0    | 3     | 0      | 0         | 0    | 0    | 0     | 0      |
| TOTAL             | 0          | 0    | 1129 | 225   | 8      | 0          | 0    | 1517 | 881   | 14     | 0         | 882  | 0    | 60    | 3      | 0         | 0    | 0    | 0     | 0      |

|                   | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
| PEAK HOUR         | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 7:00 AM - 8:00 AM | 0          | 0    | 498  | 106   | 9      | 0          | 0    | 279  | 257   | 27     | 0         | 302  | 0    | 18    | 2      | 0         | 0    | 0    | 0     | 0      |
| 4:30 PM - 5:30 PM | 0          | 0    | 581  | 115   | 5      | 0          | 0    | 817  | 487   | 4      | 0         | 437  | 0    | 34    | 1      | 0         | 0    | 0    | 0     | 0      |

|    |       |        |
|----|-------|--------|
|    | PHF   | Trucks |
| AM | 0.727 | 2.6%   |
| PM | 0.981 | 0.4%   |





Metro Traffic Data Inc.  
310 N. Irwin Street - Suite 20  
Hanford, CA 93230  
800-975-6938 Phone/Fax  
[www.metrotrafficdata.com](http://www.metrotrafficdata.com)

# Turning Movement Report

Prepared For:

Ruettgers & Schuler Civil Engineers  
1800 30th St, Ste 260  
Bakersfield, CA 93301

LOCATION Hanford Armona Rd @ SR 198 WB Onramp (Roundabout)

LATITUDE 36.3144

COUNTY Kings

LONGITUDE -119.6935

COLLECTION DATE Thursday, May 04, 2023

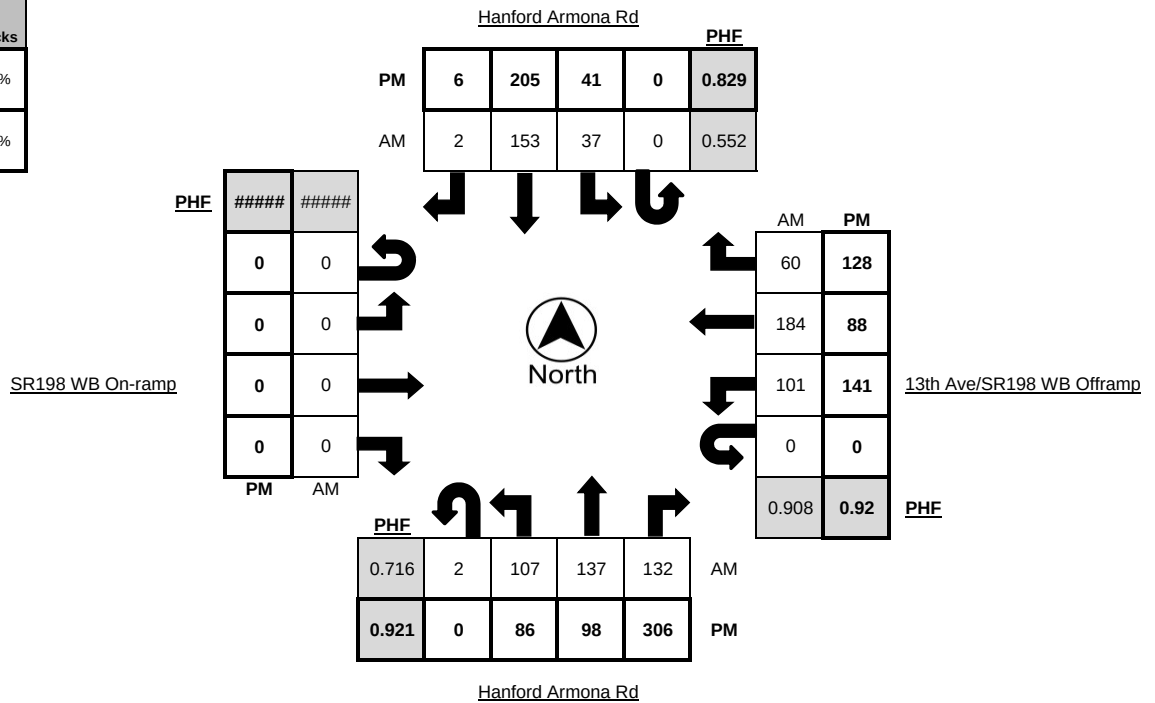
WEATHER Clear

| Time              | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 6:00 AM - 6:15 AM | 1          | 22   | 19   | 9     | 0      | 0          | 2    | 10   | 1     | 1      | 0         | 0    | 0    | 0     | 0      | 0         | 8    | 18   | 3     | 0      |
| 6:15 AM - 6:30 AM | 1          | 18   | 6    | 13    | 1      | 0          | 6    | 17   | 2     | 4      | 0         | 0    | 0    | 0     | 0      | 0         | 7    | 24   | 4     | 0      |
| 6:30 AM - 6:45 AM | 0          | 33   | 15   | 11    | 0      | 0          | 2    | 21   | 0     | 0      | 0         | 0    | 0    | 0     | 0      | 0         | 5    | 32   | 8     | 1      |
| 6:45 AM - 7:00 AM | 0          | 18   | 12   | 15    | 1      | 0          | 4    | 23   | 1     | 1      | 0         | 0    | 0    | 0     | 0      | 0         | 19   | 32   | 10    | 1      |
| 7:00 AM - 7:15 AM | 0          | 23   | 9    | 20    | 1      | 0          | 6    | 21   | 1     | 0      | 0         | 0    | 0    | 0     | 0      | 0         | 21   | 44   | 14    | 3      |
| 7:15 AM - 7:30 AM | 0          | 25   | 22   | 31    | 3      | 0          | 3    | 27   | 1     | 2      | 0         | 0    | 0    | 0     | 0      | 0         | 20   | 44   | 14    | 1      |
| 7:30 AM - 7:45 AM | 0          | 36   | 45   | 35    | 3      | 0          | 9    | 37   | 0     | 0      | 0         | 0    | 0    | 0     | 0      | 0         | 25   | 54   | 16    | 1      |
| 7:45 AM - 8:00 AM | 2          | 23   | 61   | 46    | 0      | 0          | 19   | 68   | 0     | 0      | 0         | 0    | 0    | 0     | 0      | 0         | 35   | 42   | 16    | 1      |
| TOTAL             | 4          | 198  | 189  | 180   | 9      | 0          | 51   | 224  | 6     | 8      | 0         | 0    | 0    | 0     | 0      | 0         | 140  | 290  | 85    | 8      |

| Time              | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 4:00 PM - 4:15 PM | 0          | 16   | 33   | 75    | 1      | 0          | 10   | 45   | 0     | 0      | 0         | 0    | 0    | 0     | 0      | 0         | 50   | 14   | 32    | 3      |
| 4:15 PM - 4:30 PM | 0          | 21   | 15   | 76    | 1      | 0          | 11   | 54   | 1     | 2      | 0         | 0    | 0    | 0     | 0      | 0         | 36   | 17   | 30    | 0      |
| 4:30 PM - 4:45 PM | 0          | 18   | 27   | 73    | 1      | 0          | 10   | 44   | 2     | 1      | 0         | 0    | 0    | 0     | 0      | 0         | 37   | 25   | 35    | 4      |
| 4:45 PM - 5:00 PM | 0          | 23   | 26   | 78    | 2      | 0          | 8    | 44   | 2     | 1      | 0         | 0    | 0    | 0     | 0      | 0         | 36   | 23   | 29    | 1      |
| 5:00 PM - 5:15 PM | 0          | 24   | 30   | 79    | 0      | 0          | 12   | 63   | 1     | 2      | 0         | 0    | 0    | 0     | 0      | 0         | 32   | 23   | 34    | 0      |
| 5:15 PM - 5:30 PM | 0          | 14   | 22   | 74    | 0      | 0          | 9    | 49   | 0     | 0      | 0         | 0    | 0    | 0     | 0      | 0         | 36   | 19   | 26    | 0      |
| 5:30 PM - 5:45 PM | 0          | 29   | 31   | 54    | 1      | 0          | 9    | 63   | 0     | 0      | 0         | 0    | 0    | 0     | 0      | 0         | 28   | 20   | 32    | 0      |
| 5:45 PM - 6:00 PM | 0          | 17   | 18   | 50    | 2      | 0          | 8    | 49   | 0     | 0      | 0         | 0    | 0    | 0     | 0      | 0         | 31   | 17   | 25    | 2      |
| TOTAL             | 0          | 162  | 202  | 559   | 8      | 0          | 77   | 411  | 6     | 6      | 0         | 0    | 0    | 0     | 0      | 0         | 286  | 158  | 243   | 10     |

| PEAK HOUR         | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 7:00 AM - 8:00 AM | 2          | 107  | 137  | 132   | 7      | 0          | 37   | 153  | 2     | 2      | 0         | 0    | 0    | 0     | 0      | 0         | 101  | 184  | 60    | 6      |
| 4:15 PM - 5:15 PM | 0          | 86   | 98   | 306   | 4      | 0          | 41   | 205  | 6     | 6      | 0         | 0    | 0    | 0     | 0      | 0         | 141  | 88   | 128   | 5      |

|    | PHF   | Trucks |
|----|-------|--------|
| AM | 0.733 | 1.6%   |
| PM | 0.922 | 1.4%   |





Metro Traffic Data Inc.  
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www.metrotrafficdata.com

# Turning Movement Report

Prepared For:

Ruettgers & Schuler Civil Engineers  
1800 30th St, Ste 260  
Bakersfield, CA 93301

LOCATION Hanford Armona Rd @ SR198 EB Ramps

LATITUDE 36.3138

COUNTY Kings

LONGITUDE -119.6920

COLLECTION DATE Thursday, May 04, 2023

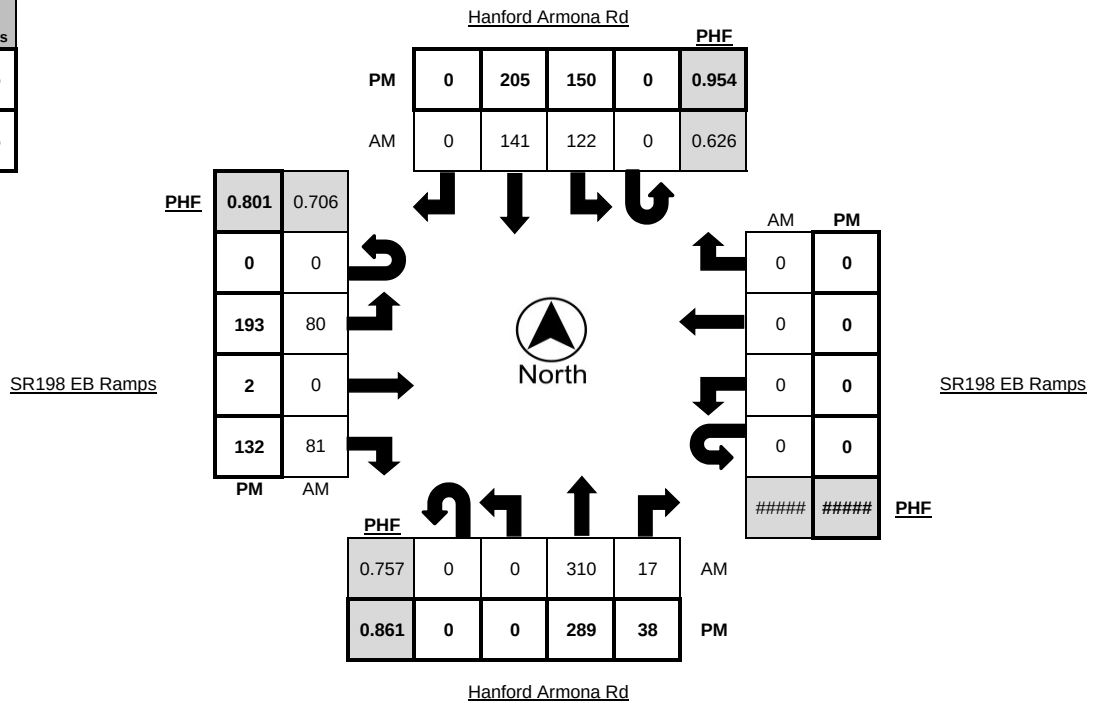
WEATHER Clear

| Time              | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 6:00 AM - 6:15 AM | 0          | 0    | 39   | 3     | 0      | 0          | 9    | 8    | 0     | 0      | 0         | 6    | 0    | 13    | 0      | 0         | 0    | 0    | 0     | 0      |
| 6:15 AM - 6:30 AM | 0          | 0    | 30   | 1     | 1      | 0          | 13   | 8    | 0     | 2      | 0         | 11   | 0    | 5     | 0      | 0         | 0    | 0    | 0     | 0      |
| 6:30 AM - 6:45 AM | 0          | 0    | 44   | 1     | 0      | 0          | 17   | 13   | 0     | 0      | 0         | 9    | 0    | 12    | 0      | 0         | 0    | 0    | 0     | 0      |
| 6:45 AM - 7:00 AM | 0          | 0    | 37   | 0     | 1      | 0          | 27   | 16   | 0     | 0      | 0         | 12   | 0    | 5     | 0      | 0         | 0    | 0    | 0     | 0      |
| 7:00 AM - 7:15 AM | 0          | 0    | 46   | 2     | 1      | 0          | 20   | 22   | 0     | 1      | 0         | 16   | 0    | 18    | 0      | 0         | 0    | 0    | 0     | 0      |
| 7:15 AM - 7:30 AM | 0          | 0    | 67   | 2     | 1      | 0          | 21   | 29   | 0     | 2      | 0         | 10   | 0    | 19    | 2      | 0         | 0    | 0    | 0     | 0      |
| 7:30 AM - 7:45 AM | 0          | 0    | 96   | 6     | 3      | 0          | 32   | 34   | 0     | 2      | 0         | 21   | 0    | 20    | 2      | 0         | 0    | 0    | 0     | 0      |
| 7:45 AM - 8:00 AM | 0          | 0    | 101  | 7     | 0      | 0          | 49   | 56   | 0     | 1      | 0         | 33   | 0    | 24    | 1      | 0         | 0    | 0    | 0     | 0      |
| TOTAL             | 0          | 0    | 460  | 22    | 7      | 0          | 188  | 186  | 0     | 8      | 0         | 118  | 0    | 116   | 5      | 0         | 0    | 0    | 0     | 0      |

| Time              | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 4:00 PM - 4:15 PM | 0          | 0    | 65   | 4     | 1      | 0          | 31   | 60   | 0     | 0      | 0         | 60   | 1    | 32    | 1      | 0         | 0    | 0    | 0     | 0      |
| 4:15 PM - 4:30 PM | 0          | 0    | 48   | 7     | 0      | 0          | 37   | 45   | 0     | 2      | 0         | 64   | 0    | 46    | 1      | 0         | 0    | 0    | 0     | 0      |
| 4:30 PM - 4:45 PM | 0          | 0    | 56   | 7     | 2      | 0          | 36   | 43   | 0     | 0      | 0         | 59   | 1    | 41    | 0      | 0         | 0    | 0    | 0     | 0      |
| 4:45 PM - 5:00 PM | 0          | 0    | 72   | 8     | 0      | 0          | 33   | 48   | 0     | 0      | 0         | 51   | 1    | 26    | 2      | 0         | 0    | 0    | 0     | 0      |
| 5:00 PM - 5:15 PM | 0          | 0    | 73   | 8     | 0      | 0          | 42   | 51   | 0     | 1      | 0         | 62   | 0    | 40    | 3      | 0         | 0    | 0    | 0     | 0      |
| 5:15 PM - 5:30 PM | 0          | 0    | 61   | 10    | 0      | 0          | 34   | 54   | 0     | 0      | 0         | 52   | 1    | 38    | 0      | 0         | 0    | 0    | 0     | 0      |
| 5:30 PM - 5:45 PM | 0          | 0    | 83   | 12    | 0      | 0          | 41   | 52   | 0     | 0      | 0         | 28   | 0    | 28    | 1      | 0         | 0    | 0    | 0     | 0      |
| 5:45 PM - 6:00 PM | 0          | 0    | 55   | 5     | 0      | 0          | 41   | 37   | 0     | 1      | 0         | 31   | 0    | 26    | 1      | 0         | 0    | 0    | 0     | 0      |
| TOTAL             | 0          | 0    | 513  | 61    | 3      | 0          | 295  | 390  | 0     | 4      | 0         | 407  | 4    | 277   | 9      | 0         | 0    | 0    | 0     | 0      |

| PEAK HOUR         | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 7:00 AM - 8:00 AM | 0          | 0    | 310  | 17    | 5      | 0          | 122  | 141  | 0     | 6      | 0         | 80   | 0    | 81    | 5      | 0         | 0    | 0    | 0     | 0      |
| 4:45 PM - 5:45 PM | 0          | 0    | 289  | 38    | 0      | 0          | 150  | 205  | 0     | 1      | 0         | 193  | 2    | 132   | 6      | 0         | 0    | 0    | 0     | 0      |

|    | PHF   | Trucks |
|----|-------|--------|
| AM | 0.695 | 2.1%   |
| PM | 0.914 | 0.7%   |







Metro Traffic Data Inc.  
310 N. Irwin Street - Suite 20  
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www.metrotrafficdata.com

# Turning Movement Report

Prepared For:

Ruettgers & Schuler Civil Engineers  
1800 30th St, Ste 260  
Bakersfield, CA 93301

LOCATION 13th Ave @ Hanford Armona Rd

LATITUDE 36.3136

COUNTY Kings

LONGITUDE -119.6910

COLLECTION DATE Thursday, May 04, 2023

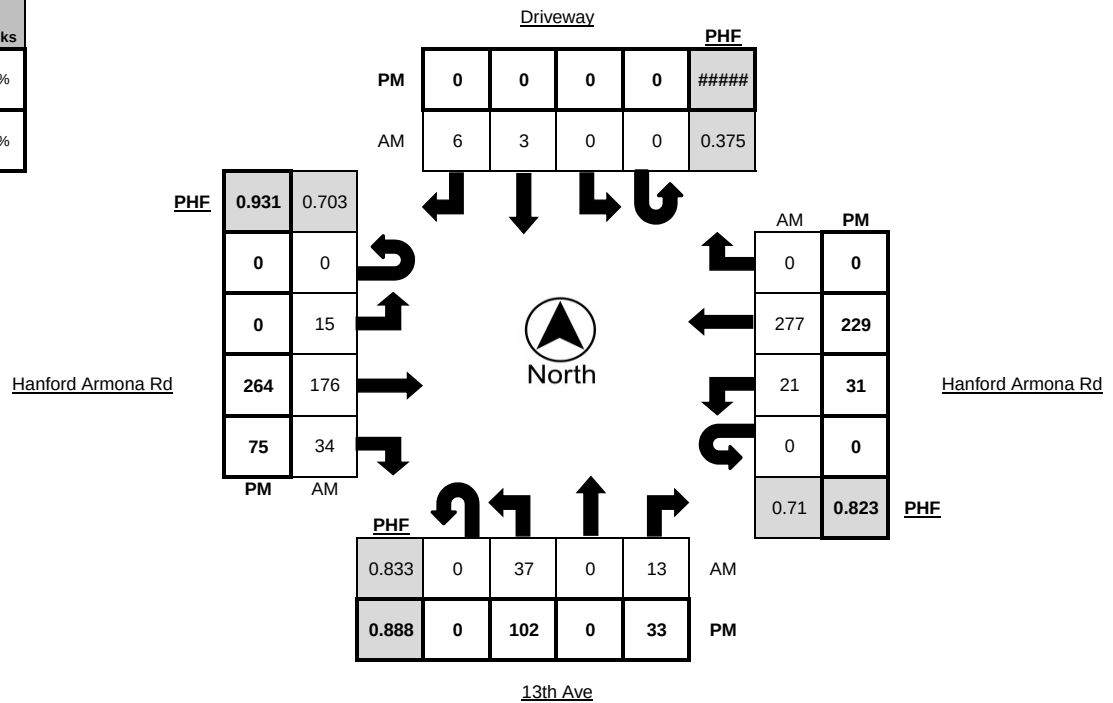
WEATHER Clear

| Time              | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 6:00 AM - 6:15 AM | 0          | 3    | 0    | 1     | 0      | 0          | 0    | 0    | 0     | 0      | 0         | 0    | 17   | 4     | 0      | 0         | 2    | 40   | 0     | 0      |
| 6:15 AM - 6:30 AM | 0          | 4    | 0    | 2     | 0      | 0          | 0    | 0    | 0     | 0      | 0         | 0    | 11   | 2     | 0      | 0         | 2    | 27   | 0     | 1      |
| 6:30 AM - 6:45 AM | 0          | 2    | 0    | 1     | 0      | 0          | 0    | 0    | 0     | 0      | 0         | 0    | 20   | 5     | 0      | 0         | 2    | 46   | 0     | 0      |
| 6:45 AM - 7:00 AM | 0          | 1    | 0    | 5     | 0      | 0          | 0    | 0    | 0     | 0      | 0         | 2    | 17   | 4     | 2      | 0         | 1    | 33   | 0     | 1      |
| 7:00 AM - 7:15 AM | 0          | 6    | 0    | 1     | 1      | 0          | 0    | 0    | 0     | 0      | 0         | 5    | 28   | 7     | 0      | 0         | 6    | 38   | 0     | 0      |
| 7:15 AM - 7:30 AM | 0          | 11   | 0    | 2     | 1      | 0          | 0    | 0    | 2     | 0      | 0         | 5    | 35   | 9     | 1      | 0         | 4    | 58   | 0     | 1      |
| 7:30 AM - 7:45 AM | 0          | 9    | 0    | 6     | 0      | 0          | 0    | 2    | 4     | 0      | 0         | 2    | 47   | 7     | 3      | 0         | 7    | 80   | 0     | 2      |
| 7:45 AM - 8:00 AM | 0          | 11   | 0    | 4     | 0      | 0          | 0    | 1    | 0     | 0      | 0         | 3    | 66   | 11    | 0      | 0         | 4    | 101  | 0     | 2      |
| TOTAL             | 0          | 47   | 0    | 22    | 2      | 0          | 0    | 3    | 6     | 0      | 0         | 17   | 241  | 49    | 6      | 0         | 28   | 423  | 0     | 7      |

| Time              | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 4:00 PM - 4:15 PM | 0          | 14   | 0    | 14    | 0      | 0          | 1    | 0    | 1     | 0      | 0         | 0    | 71   | 28    | 2      | 0         | 12   | 55   | 0     | 2      |
| 4:15 PM - 4:30 PM | 0          | 15   | 0    | 3     | 0      | 0          | 0    | 0    | 1     | 0      | 0         | 0    | 75   | 17    | 1      | 0         | 4    | 43   | 0     | 0      |
| 4:30 PM - 4:45 PM | 0          | 17   | 0    | 10    | 2      | 0          | 0    | 0    | 1     | 0      | 0         | 1    | 63   | 22    | 1      | 0         | 13   | 43   | 0     | 0      |
| 4:45 PM - 5:00 PM | 0          | 30   | 0    | 8     | 0      | 0          | 0    | 0    | 0     | 0      | 0         | 0    | 47   | 28    | 1      | 0         | 8    | 51   | 0     | 0      |
| 5:00 PM - 5:15 PM | 0          | 22   | 0    | 11    | 0      | 0          | 0    | 0    | 0     | 0      | 0         | 0    | 73   | 18    | 3      | 0         | 6    | 61   | 0     | 0      |
| 5:15 PM - 5:30 PM | 0          | 24   | 0    | 7     | 0      | 0          | 0    | 0    | 0     | 0      | 0         | 0    | 76   | 15    | 0      | 0         | 6    | 49   | 0     | 0      |
| 5:30 PM - 5:45 PM | 0          | 26   | 0    | 7     | 0      | 0          | 0    | 0    | 0     | 0      | 0         | 0    | 68   | 14    | 0      | 0         | 11   | 68   | 0     | 0      |
| 5:45 PM - 6:00 PM | 0          | 16   | 0    | 9     | 0      | 0          | 0    | 0    | 0     | 0      | 0         | 0    | 51   | 13    | 2      | 0         | 15   | 44   | 0     | 1      |
| TOTAL             | 0          | 164  | 0    | 69    | 2      | 0          | 1    | 0    | 3     | 0      | 0         | 2    | 524  | 155   | 10     | 0         | 75   | 414  | 0     | 3      |

| PEAK HOUR         | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 7:00 AM - 8:00 AM | 0          | 37   | 0    | 13    | 2      | 0          | 0    | 3    | 6     | 0      | 0         | 15   | 176  | 34    | 4      | 0         | 21   | 277  | 0     | 5      |
| 4:45 PM - 5:45 PM | 0          | 102  | 0    | 33    | 0      | 0          | 0    | 0    | 0     | 0      | 0         | 0    | 264  | 75    | 4      | 0         | 31   | 229  | 0     | 0      |

|    | PHF   | Trucks |
|----|-------|--------|
| AM | 0.724 | 1.9%   |
| PM | 0.946 | 0.5%   |





Metro Traffic Data Inc.  
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Hanford, CA 93230  
800-975-6938 Phone/Fax  
www.metrotrafficdata.com

# Turning Movement Report

Prepared For:

Ruettgers & Schuler Civil Engineers  
1800 30th St, Ste 260  
Bakersfield, CA 93301

LOCATION 12th Ave @ Hanford Armona Rd

LATITUDE 36.3135

COUNTY Kings

LONGITUDE -119.6730

COLLECTION DATE Thursday, May 04, 2023

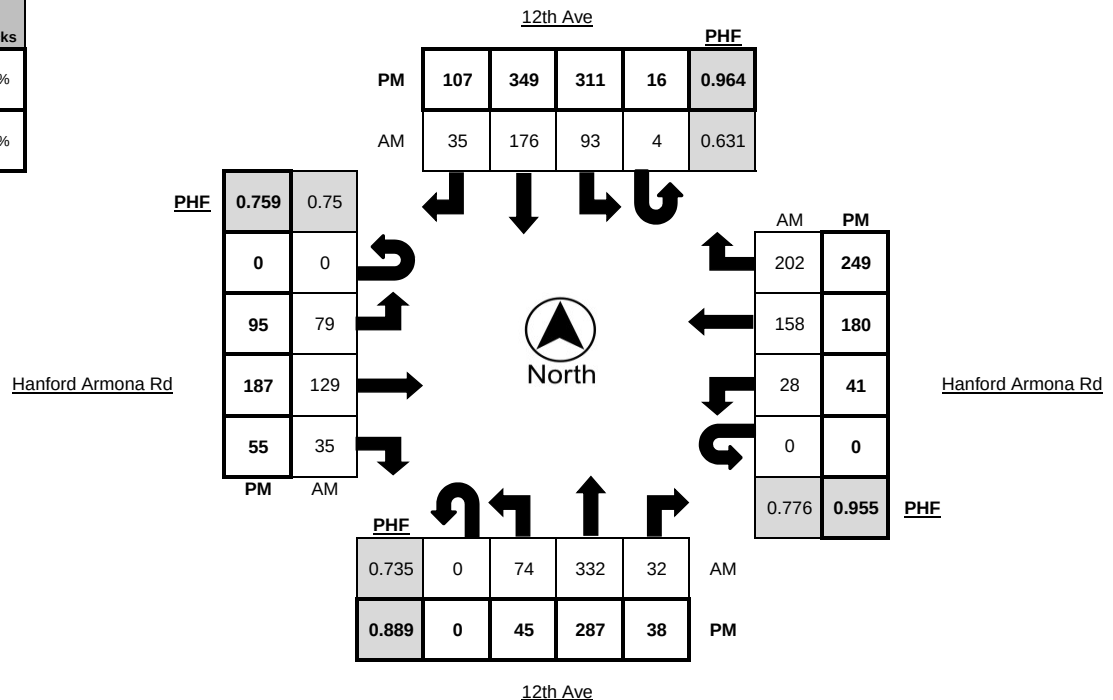
WEATHER Clear

| Time              | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 6:00 AM - 6:15 AM | 0          | 8    | 26   | 3     | 0      | 0          | 8    | 23   | 1     | 0      | 0         | 5    | 17   | 4     | 0      | 0         | 1    | 24   | 22    | 0      |
| 6:15 AM - 6:30 AM | 0          | 10   | 29   | 1     | 0      | 0          | 4    | 10   | 3     | 2      | 0         | 9    | 18   | 3     | 0      | 0         | 2    | 16   | 19    | 1      |
| 6:30 AM - 6:45 AM | 0          | 14   | 33   | 8     | 1      | 0          | 8    | 14   | 5     | 4      | 0         | 9    | 25   | 2     | 0      | 0         | 5    | 26   | 23    | 0      |
| 6:45 AM - 7:00 AM | 0          | 6    | 38   | 2     | 2      | 0          | 14   | 10   | 5     | 2      | 0         | 17   | 40   | 6     | 2      | 0         | 3    | 21   | 29    | 1      |
| 7:00 AM - 7:15 AM | 0          | 14   | 36   | 8     | 2      | 0          | 18   | 23   | 2     | 2      | 0         | 11   | 21   | 8     | 0      | 0         | 8    | 25   | 30    | 1      |
| 7:15 AM - 7:30 AM | 0          | 21   | 68   | 4     | 0      | 0          | 18   | 43   | 7     | 4      | 0         | 11   | 25   | 7     | 2      | 0         | 6    | 30   | 47    | 2      |
| 7:30 AM - 7:45 AM | 0          | 21   | 116  | 12    | 3      | 1          | 19   | 47   | 8     | 5      | 0         | 29   | 39   | 11    | 3      | 0         | 6    | 54   | 57    | 4      |
| 7:45 AM - 8:00 AM | 0          | 18   | 112  | 8     | 1      | 3          | 38   | 63   | 18    | 2      | 0         | 28   | 44   | 9     | 0      | 0         | 8    | 49   | 68    | 0      |
| TOTAL             | 0          | 112  | 458  | 46    | 9      | 4          | 127  | 233  | 49    | 21     | 0         | 119  | 229  | 50    | 7      | 0         | 39   | 245  | 295   | 9      |

| Time              | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 4:00 PM - 4:15 PM | 0          | 11   | 64   | 13    | 2      | 9          | 59   | 66   | 26    | 2      | 0         | 22   | 51   | 13    | 2      | 0         | 9    | 46   | 63    | 1      |
| 4:15 PM - 4:30 PM | 0          | 2    | 75   | 8     | 1      | 2          | 74   | 93   | 19    | 4      | 0         | 15   | 40   | 23    | 0      | 0         | 7    | 43   | 54    | 0      |
| 4:30 PM - 4:45 PM | 0          | 8    | 102  | 9     | 2      | 4          | 78   | 70   | 26    | 1      | 0         | 19   | 51   | 9     | 0      | 0         | 1    | 30   | 57    | 0      |
| 4:45 PM - 5:00 PM | 0          | 9    | 79   | 10    | 1      | 6          | 81   | 91   | 25    | 1      | 0         | 17   | 39   | 8     | 0      | 0         | 17   | 33   | 73    | 0      |
| 5:00 PM - 5:15 PM | 0          | 12   | 64   | 9     | 3      | 1          | 72   | 88   | 33    | 0      | 0         | 29   | 42   | 11    | 2      | 0         | 7    | 44   | 64    | 1      |
| 5:15 PM - 5:30 PM | 0          | 11   | 63   | 9     | 1      | 4          | 82   | 89   | 25    | 0      | 0         | 33   | 62   | 16    | 1      | 0         | 11   | 47   | 53    | 1      |
| 5:30 PM - 5:45 PM | 0          | 13   | 81   | 10    | 1      | 5          | 76   | 81   | 24    | 1      | 0         | 16   | 44   | 20    | 0      | 0         | 6    | 56   | 59    | 0      |
| 5:45 PM - 6:00 PM | 0          | 8    | 71   | 11    | 1      | 2          | 76   | 74   | 33    | 0      | 0         | 23   | 32   | 19    | 0      | 0         | 10   | 40   | 50    | 1      |
| TOTAL             | 0          | 74   | 599  | 79    | 12     | 33         | 598  | 652  | 211   | 9      | 0         | 174  | 361  | 119   | 5      | 0         | 68   | 339  | 473   | 4      |

| PEAK HOUR         | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 7:00 AM - 8:00 AM | 0          | 74   | 332  | 32    | 6      | 4          | 93   | 176  | 35    | 13     | 0         | 79   | 129  | 35    | 5      | 0         | 28   | 158  | 202   | 7      |
| 4:45 PM - 5:45 PM | 0          | 45   | 287  | 38    | 6      | 16         | 311  | 349  | 107   | 2      | 0         | 95   | 187  | 55    | 3      | 0         | 41   | 180  | 249   | 2      |

|    | PHF   | Trucks |
|----|-------|--------|
| AM | 0.739 | 2.3%   |
| PM | 0.970 | 0.7%   |





Metro Traffic Data Inc.  
310 N. Irwin Street - Suite 20  
Hanford, CA 93230  
800-975-6938 Phone/Fax  
www.metrotrafficdata.com

# Turning Movement Report

Prepared For:

Ruettgers & Schuler Civil Engineers  
1800 30th St, Ste 260  
Bakersfield, CA 93301

LOCATION 11th Ave @ Hanford Armona Rd

LATITUDE 36.3134

COUNTY Kings

LONGITUDE -119.6550

COLLECTION DATE Thursday, May 04, 2023

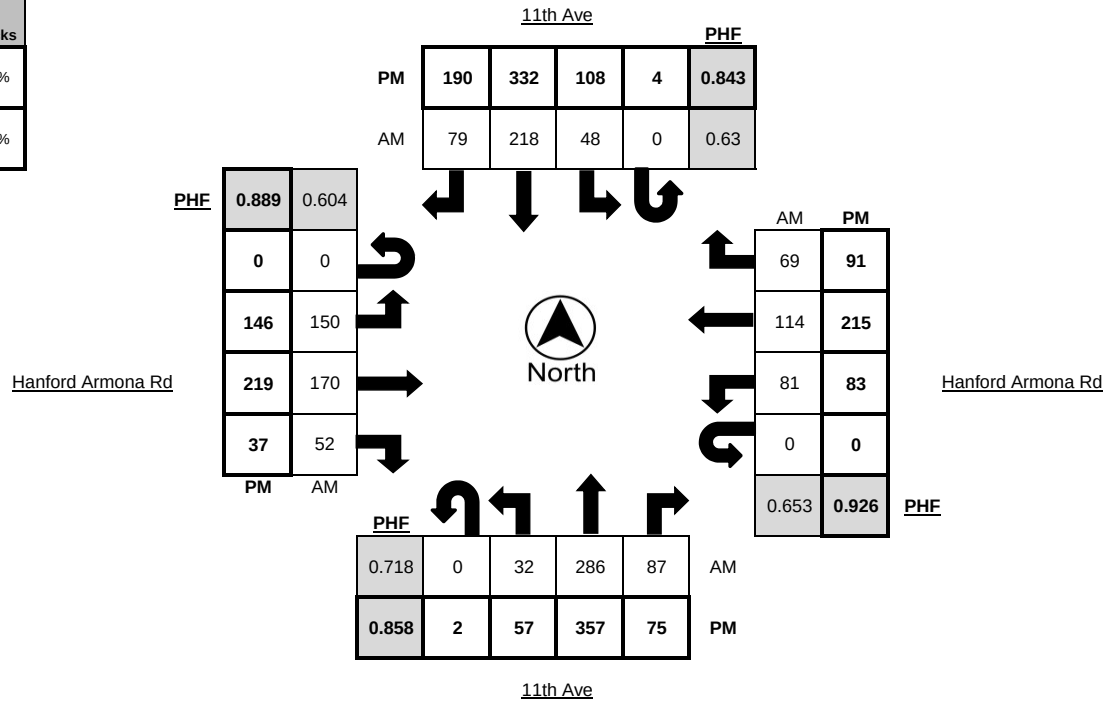
WEATHER Clear

| Time              | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 6:00 AM - 6:15 AM | 0          | 3    | 31   | 7     | 0      | 0          | 4    | 28   | 2     | 1      | 0         | 9    | 12   | 3     | 0      | 0         | 5    | 9    | 4     | 2      |
| 6:15 AM - 6:30 AM | 0          | 6    | 28   | 9     | 1      | 0          | 2    | 27   | 6     | 0      | 0         | 5    | 20   | 2     | 0      | 0         | 5    | 13   | 4     | 2      |
| 6:30 AM - 6:45 AM | 0          | 5    | 42   | 9     | 0      | 0          | 4    | 19   | 9     | 1      | 0         | 10   | 19   | 5     | 0      | 0         | 5    | 12   | 11    | 2      |
| 6:45 AM - 7:00 AM | 0          | 1    | 40   | 9     | 4      | 0          | 4    | 35   | 5     | 2      | 0         | 11   | 22   | 4     | 3      | 0         | 1    | 11   | 9     | 0      |
| 7:00 AM - 7:15 AM | 0          | 4    | 38   | 8     | 2      | 0          | 3    | 38   | 10    | 6      | 0         | 21   | 31   | 6     | 2      | 0         | 11   | 23   | 6     | 1      |
| 7:15 AM - 7:30 AM | 0          | 6    | 53   | 21    | 7      | 0          | 11   | 43   | 14    | 3      | 0         | 22   | 23   | 10    | 2      | 0         | 20   | 20   | 16    | 3      |
| 7:30 AM - 7:45 AM | 0          | 12   | 93   | 29    | 1      | 0          | 15   | 55   | 19    | 4      | 0         | 49   | 43   | 13    | 8      | 0         | 23   | 27   | 17    | 2      |
| 7:45 AM - 8:00 AM | 0          | 10   | 102  | 29    | 1      | 0          | 19   | 82   | 36    | 3      | 0         | 58   | 73   | 23    | 2      | 0         | 27   | 44   | 30    | 1      |
| TOTAL             | 0          | 47   | 427  | 121   | 16     | 0          | 62   | 327  | 101   | 20     | 0         | 185  | 243  | 66    | 17     | 0         | 97   | 159  | 97    | 13     |

| Time              | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 4:00 PM - 4:15 PM | 1          | 16   | 81   | 13    | 2      | 0          | 25   | 77   | 37    | 2      | 0         | 33   | 39   | 14    | 3      | 0         | 20   | 48   | 22    | 2      |
| 4:15 PM - 4:30 PM | 0          | 15   | 65   | 13    | 2      | 1          | 20   | 91   | 45    | 1      | 0         | 40   | 41   | 12    | 2      | 0         | 23   | 49   | 11    | 4      |
| 4:30 PM - 4:45 PM | 1          | 21   | 83   | 22    | 0      | 1          | 29   | 60   | 43    | 4      | 0         | 27   | 53   | 9     | 1      | 0         | 25   | 54   | 21    | 0      |
| 4:45 PM - 5:00 PM | 0          | 12   | 94   | 14    | 2      | 1          | 30   | 81   | 47    | 1      | 0         | 35   | 46   | 8     | 2      | 0         | 21   | 51   | 23    | 0      |
| 5:00 PM - 5:15 PM | 0          | 13   | 109  | 21    | 0      | 2          | 27   | 107  | 52    | 1      | 0         | 46   | 56   | 9     | 1      | 0         | 19   | 60   | 26    | 0      |
| 5:15 PM - 5:30 PM | 1          | 11   | 71   | 18    | 2      | 0          | 22   | 84   | 48    | 0      | 0         | 38   | 64   | 11    | 1      | 0         | 18   | 50   | 21    | 2      |
| 5:30 PM - 5:45 PM | 1          | 16   | 69   | 17    | 2      | 1          | 21   | 69   | 35    | 3      | 0         | 39   | 51   | 11    | 2      | 0         | 14   | 49   | 28    | 0      |
| 5:45 PM - 6:00 PM | 0          | 9    | 76   | 18    | 1      | 2          | 17   | 61   | 34    | 0      | 0         | 18   | 47   | 4     | 1      | 0         | 15   | 50   | 23    | 1      |
| TOTAL             | 4          | 113  | 648  | 136   | 11     | 8          | 191  | 630  | 341   | 12     | 0         | 276  | 397  | 78    | 13     | 0         | 155  | 411  | 175   | 9      |

| PEAK HOUR         | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 7:00 AM - 8:00 AM | 0          | 32   | 286  | 87    | 11     | 0          | 48   | 218  | 79    | 16     | 0         | 150  | 170  | 52    | 14     | 0         | 81   | 114  | 69    | 7      |
| 4:30 PM - 5:30 PM | 2          | 57   | 357  | 75    | 4      | 4          | 108  | 332  | 190   | 6      | 0         | 146  | 219  | 37    | 5      | 0         | 83   | 215  | 91    | 2      |

|    | PHF   | Trucks |
|----|-------|--------|
| AM | 0.650 | 3.5%   |
| PM | 0.876 | 0.9%   |



# Turning Movement Report

Prepared For: **Ruettgers & Schuler Civil Engineers**  
1800 30th St, Ste 260  
Bakersfield, CA 93301

**LOCATION** 12th Ave @ Hume Ave

LATITUDE 36.3057

COUNTY Kings

LONGITUDE -119.6729

COLLECTION DATE Thursday, May 04, 2023

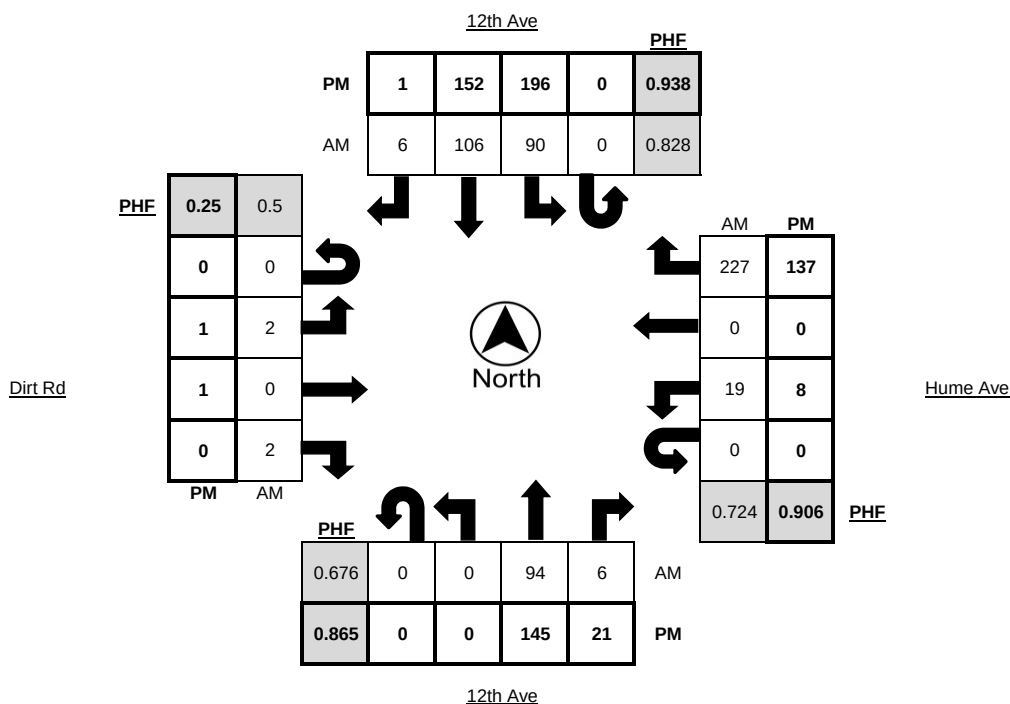
WEATHER Clear

|                   | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
| Time              | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 6:00 AM - 6:15 AM | 0          | 0    | 9    | 2     | 0      | 0          | 10   | 16   | 0     | 0      | 0         | 0    | 0    | 0     | 0      | 0         | 2    | 0    | 15    | 0      |
| 6:15 AM - 6:30 AM | 0          | 0    | 8    | 0     | 0      | 0          | 8    | 12   | 0     | 1      | 0         | 1    | 0    | 0     | 0      | 0         | 5    | 0    | 17    | 0      |
| 6:30 AM - 6:45 AM | 0          | 0    | 11   | 1     | 1      | 0          | 10   | 23   | 2     | 3      | 0         | 0    | 0    | 0     | 0      | 0         | 1    | 0    | 27    | 1      |
| 6:45 AM - 7:00 AM | 0          | 1    | 14   | 0     | 0      | 0          | 15   | 25   | 1     | 1      | 0         | 0    | 0    | 0     | 0      | 0         | 2    | 0    | 12    | 0      |
| 7:00 AM - 7:15 AM | 0          | 0    | 13   | 0     | 0      | 0          | 9    | 22   | 1     | 2      | 0         | 0    | 0    | 0     | 0      | 0         | 5    | 0    | 29    | 2      |
| 7:15 AM - 7:30 AM | 0          | 0    | 18   | 0     | 0      | 0          | 26   | 35   | 0     | 1      | 0         | 2    | 0    | 0     | 0      | 0         | 3    | 0    | 48    | 1      |
| 7:30 AM - 7:45 AM | 0          | 0    | 33   | 4     | 1      | 0          | 28   | 25   | 3     | 6      | 0         | 0    | 0    | 1     | 0      | 0         | 5    | 0    | 80    | 2      |
| 7:45 AM - 8:00 AM | 0          | 0    | 30   | 2     | 0      | 0          | 27   | 24   | 2     | 1      | 0         | 0    | 0    | 1     | 0      | 0         | 6    | 0    | 70    | 5      |
| TOTAL             | 0          | 1    | 136  | 9     | 2      | 0          | 133  | 182  | 9     | 15     | 0         | 3    | 0    | 2     | 0      | 0         | 29   | 0    | 298   | 11     |

|                   | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
| Time              | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 4:00 PM - 4:15 PM | 0          | 0    | 36   | 4     | 0      | 0          | 41   | 28   | 0     | 2      | 0         | 0    | 0    | 0     | 0      | 0         | 2    | 0    | 31    | 2      |
| 4:15 PM - 4:30 PM | 0          | 0    | 37   | 1     | 1      | 0          | 49   | 40   | 1     | 2      | 0         | 0    | 0    | 0     | 0      | 0         | 3    | 0    | 25    | 0      |
| 4:30 PM - 4:45 PM | 0          | 0    | 42   | 4     | 4      | 0          | 37   | 32   | 0     | 0      | 0         | 1    | 0    | 0     | 1      | 0         | 4    | 0    | 36    | 3      |
| 4:45 PM - 5:00 PM | 0          | 0    | 43   | 4     | 0      | 0          | 56   | 36   | 1     | 0      | 0         | 1    | 1    | 0     | 0      | 0         | 1    | 0    | 29    | 0      |
| 5:00 PM - 5:15 PM | 0          | 0    | 36   | 4     | 0      | 0          | 48   | 40   | 0     | 1      | 0         | 0    | 0    | 0     | 0      | 0         | 1    | 0    | 37    | 1      |
| 5:15 PM - 5:30 PM | 0          | 0    | 25   | 6     | 0      | 0          | 39   | 47   | 0     | 0      | 0         | 0    | 0    | 0     | 0      | 0         | 3    | 0    | 37    | 0      |
| 5:30 PM - 5:45 PM | 0          | 0    | 41   | 7     | 0      | 0          | 53   | 29   | 0     | 1      | 0         | 0    | 0    | 0     | 0      | 0         | 3    | 0    | 34    | 1      |
| 5:45 PM - 6:00 PM | 0          | 0    | 32   | 4     | 1      | 0          | 39   | 30   | 0     | 0      | 0         | 0    | 0    | 0     | 0      | 0         | 0    | 0    | 22    | 0      |
| TOTAL             | 0          | 0    | 292  | 34    | 6      | 0          | 362  | 282  | 2     | 6      | 0         | 2    | 1    | 0     | 1      | 0         | 17   | 0    | 251   | 7      |

|                   | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
| PEAK HOUR         | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 7:00 AM - 8:00 AM | 0          | 0    | 94   | 6     | 1      | 0          | 90   | 106  | 6     | 10     | 0         | 2    | 0    | 2     | 0      | 0         | 19   | 0    | 227   | 10     |
| 4:45 PM - 5:45 PM | 0          | 0    | 145  | 21    | 0      | 0          | 196  | 152  | 1     | 2      | 0         | 1    | 1    | 0     | 0      | 0         | 8    | 0    | 137   | 2      |

|    |       |        |
|----|-------|--------|
|    | PHF   | Trucks |
| AM | 0.771 | 3.8%   |
| PM | 0.962 | 0.6%   |





Metro Traffic Data Inc.  
310 N. Irwin Street - Suite 20  
Hanford, CA 93230  
800-975-6938 Phone/Fax  
[www.metrotrafficdata.com](http://www.metrotrafficdata.com)

# Turning Movement Report

Prepared For:

Ruettgers & Schuler Civil Engineers  
1800 30th St, Ste 260  
Bakersfield, CA 93301

LOCATION 13th Ave @ SR198 WB Offramp

LATITUDE 36.3151

COUNTY Kings

LONGITUDE -119.6910

COLLECTION DATE Tuesday, May 09, 2023

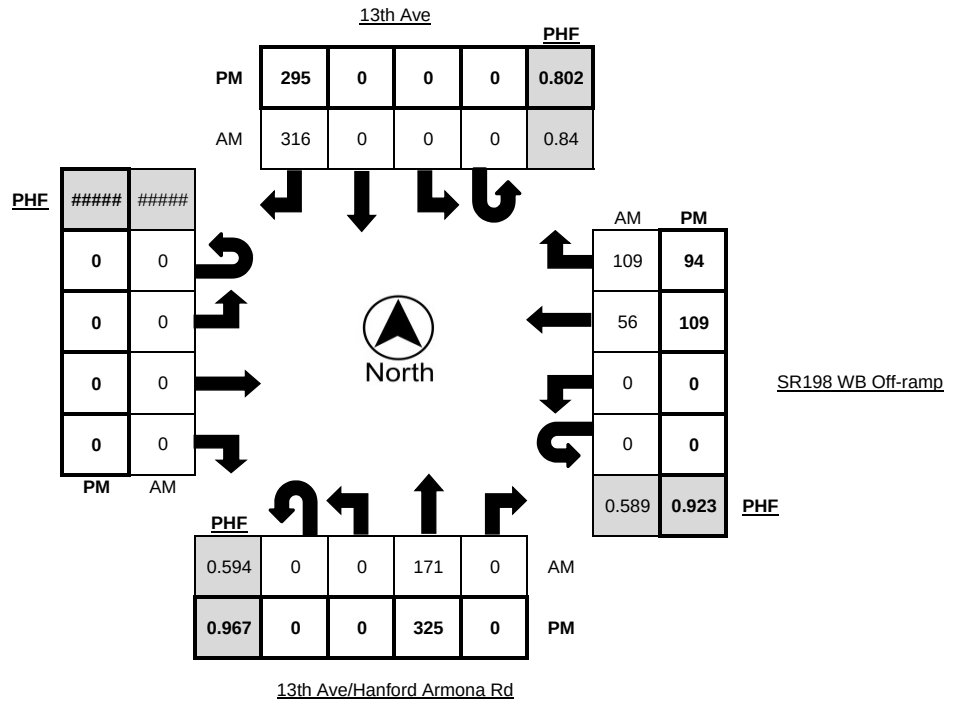
WEATHER Clear

| Time              | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 6:00 AM - 6:15 AM | 0          | 0    | 10   | 0     | 1      | 0          | 0    | 0    | 34    | 0      | 0         | 0    | 0    | 0     | 0      | 0         | 0    | 5    | 12    | 0      |
| 6:15 AM - 6:30 AM | 0          | 0    | 18   | 0     | 1      | 0          | 0    | 0    | 33    | 0      | 0         | 0    | 0    | 0     | 0      | 0         | 0    | 1    | 4     | 0      |
| 6:30 AM - 6:45 AM | 0          | 0    | 21   | 0     | 0      | 0          | 0    | 0    | 40    | 0      | 0         | 0    | 0    | 0     | 0      | 0         | 0    | 4    | 9     | 1      |
| 6:45 AM - 7:00 AM | 0          | 0    | 16   | 0     | 1      | 0          | 0    | 0    | 49    | 0      | 0         | 0    | 0    | 0     | 0      | 0         | 0    | 9    | 13    | 0      |
| 7:00 AM - 7:15 AM | 0          | 0    | 24   | 0     | 0      | 0          | 0    | 0    | 79    | 1      | 0         | 0    | 0    | 0     | 0      | 0         | 0    | 11   | 9     | 0      |
| 7:15 AM - 7:30 AM | 0          | 0    | 24   | 0     | 2      | 0          | 0    | 0    | 61    | 0      | 0         | 0    | 0    | 0     | 0      | 0         | 0    | 11   | 22    | 0      |
| 7:30 AM - 7:45 AM | 0          | 0    | 51   | 0     | 3      | 0          | 0    | 0    | 94    | 0      | 0         | 0    | 0    | 0     | 0      | 0         | 0    | 12   | 30    | 0      |
| 7:45 AM - 8:00 AM | 0          | 0    | 72   | 0     | 1      | 0          | 0    | 0    | 82    | 2      | 0         | 0    | 0    | 0     | 0      | 0         | 0    | 22   | 48    | 0      |
| TOTAL             | 0          | 0    | 236  | 0     | 9      | 0          | 0    | 0    | 472   | 3      | 0         | 0    | 0    | 0     | 0      | 0         | 0    | 75   | 147   | 1      |

| Time              | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 4:00 PM - 4:15 PM | 0          | 0    | 83   | 0     | 2      | 0          | 0    | 0    | 92    | 1      | 0         | 0    | 0    | 0     | 0      | 0         | 0    | 27   | 23    | 0      |
| 4:15 PM - 4:30 PM | 0          | 0    | 84   | 0     | 0      | 0          | 0    | 0    | 50    | 0      | 0         | 0    | 0    | 0     | 0      | 0         | 0    | 31   | 20    | 1      |
| 4:30 PM - 4:45 PM | 0          | 0    | 77   | 0     | 0      | 0          | 0    | 0    | 78    | 0      | 0         | 0    | 0    | 0     | 0      | 0         | 0    | 28   | 27    | 3      |
| 4:45 PM - 5:00 PM | 0          | 0    | 81   | 0     | 0      | 0          | 0    | 0    | 75    | 0      | 0         | 0    | 0    | 0     | 0      | 0         | 0    | 23   | 24    | 0      |
| 5:00 PM - 5:15 PM | 0          | 0    | 86   | 0     | 0      | 0          | 0    | 0    | 57    | 1      | 0         | 0    | 0    | 0     | 0      | 0         | 0    | 23   | 24    | 2      |
| 5:15 PM - 5:30 PM | 0          | 0    | 78   | 0     | 0      | 0          | 0    | 0    | 67    | 0      | 0         | 0    | 0    | 0     | 0      | 0         | 0    | 29   | 30    | 1      |
| 5:30 PM - 5:45 PM | 0          | 0    | 69   | 0     | 0      | 0          | 0    | 0    | 68    | 1      | 0         | 0    | 0    | 0     | 0      | 0         | 0    | 21   | 30    | 0      |
| 5:45 PM - 6:00 PM | 0          | 0    | 73   | 0     | 0      | 0          | 0    | 0    | 58    | 0      | 0         | 0    | 0    | 0     | 0      | 0         | 0    | 29   | 29    | 1      |
| TOTAL             | 0          | 0    | 631  | 0     | 2      | 0          | 0    | 0    | 545   | 3      | 0         | 0    | 0    | 0     | 0      | 0         | 0    | 211  | 207   | 8      |

| PEAK HOUR         | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 7:00 AM - 8:00 AM | 0          | 0    | 171  | 0     | 6      | 0          | 0    | 0    | 316   | 3      | 0         | 0    | 0    | 0     | 0      | 0         | 0    | 56   | 109   | 0      |
| 4:00 PM - 5:00 PM | 0          | 0    | 325  | 0     | 2      | 0          | 0    | 0    | 295   | 1      | 0         | 0    | 0    | 0     | 0      | 0         | 0    | 109  | 94    | 4      |

|    | PHF   | Trucks |
|----|-------|--------|
| AM | 0.728 | 1.4%   |
| PM | 0.914 | 0.9%   |



TRIP GENERATION  
LIVE OAK DEVELOPMENT  
TRACTS 1 AND 2

*ITE Trip Generation Manual*, 11th Edition

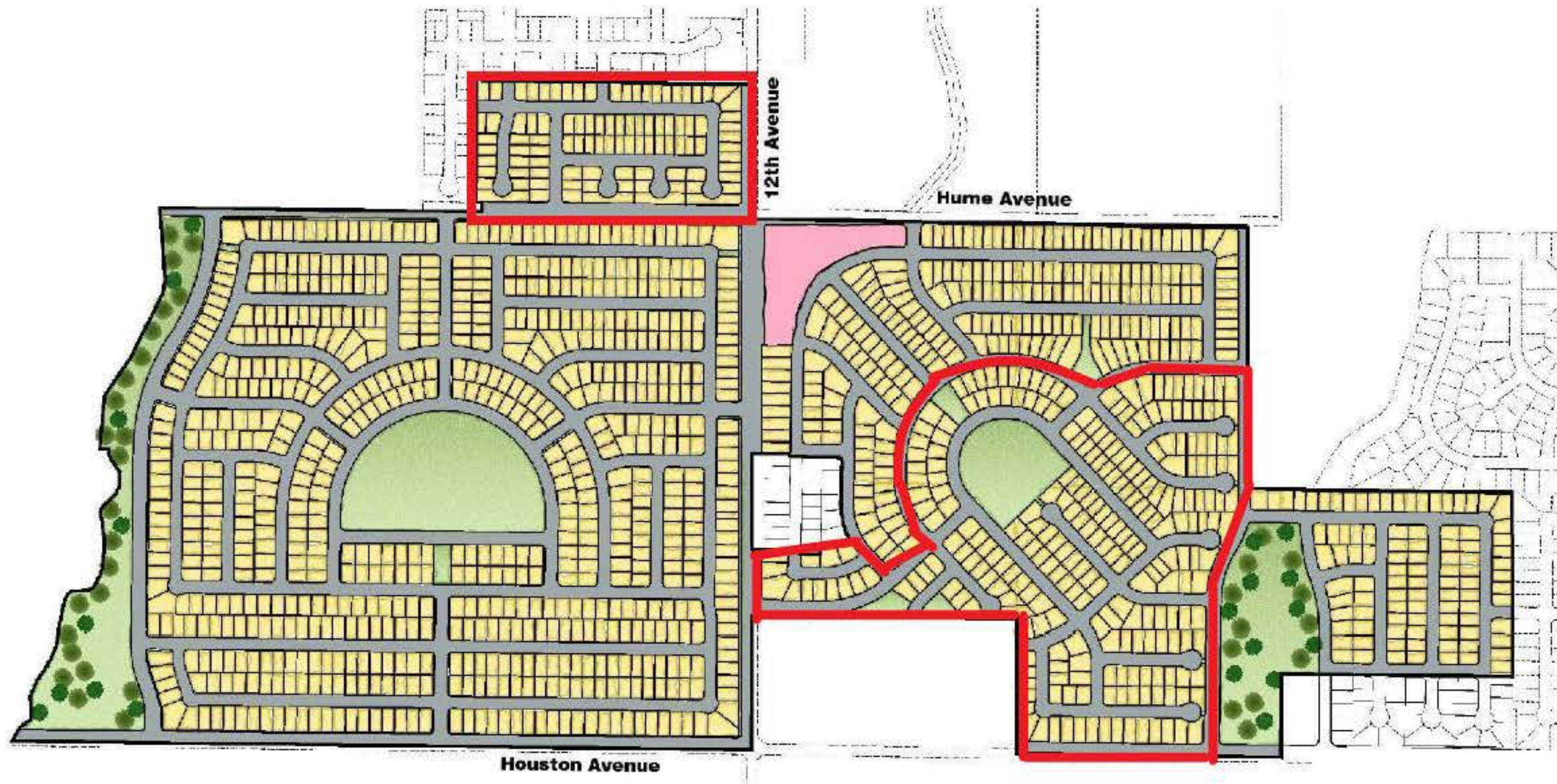
| Land Use |                                |                    | Daily Trips |       | AM Peak Hour Trips |                |                 | PM Peak Hour Trips |                |                 |
|----------|--------------------------------|--------------------|-------------|-------|--------------------|----------------|-----------------|--------------------|----------------|-----------------|
| ITE Code | Development Type               | Variable           | ADT Rate    | ADT   | Rate               | IN Split Trips | OUT Split Trips | Rate               | IN Split Trips | OUT Split Trips |
| 210      | Single-Family Detached Housing | 313 Dwelling Units | eq          | 2,883 | eq                 | 26%<br>55      | 74%<br>156      | eq                 | 63%<br>183     | 37%<br>107      |



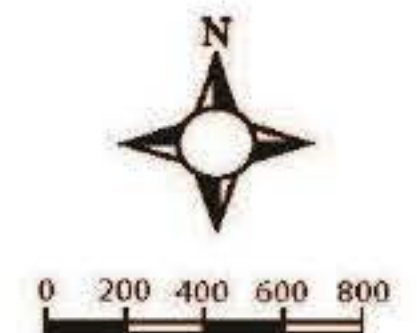
# Figure 3-1

## Land Use Illustrative

### Legend



| Land Use                                                                            |                               | Acres Units |       |
|-------------------------------------------------------------------------------------|-------------------------------|-------------|-------|
|  | Low Density Residential (LD)  | 336.1       | 1,542 |
|  | Parks (P)                     | 17.9        | 0     |
|  | Commercial (C)                | 4.4         | 0     |
|  | Open Space/ Conservative (OS) | 31.6        | 0     |
| Total                                                                               |                               | 390.0       | 1,542 |





TRIP GENERATION  
LIVE OAK DEVELOPMENT  
FULL BUILDOUT

*ITE Trip Generation Manual*, 11th Edition

| Land Use |                                |                      | Daily Trips |        | AM Peak Hour Trips |                |                 | PM Peak Hour Trips |                |                 |
|----------|--------------------------------|----------------------|-------------|--------|--------------------|----------------|-----------------|--------------------|----------------|-----------------|
| ITE Code | Development Type               | Variable             | ADT Rate    | ADT    | Rate               | IN Split Trips | OUT Split Trips | Rate               | IN Split Trips | OUT Split Trips |
| 210      | Single-Family Detached Housing | 1,542 Dwelling Units | eq          | 12,501 | eq                 | 26%<br>233     | 74%<br>665      | eq                 | 63%<br>819     | 37%<br>481      |



# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

PM 2024  
07/16/2024

| Movement                            | EBL | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|-------------------------------------|-----|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations                 |     |      |      | ↰    |      | ↰    | ↰    | ↰    |      |      | ↰    | ↰    |
| Traffic Volume (veh/h)              | 0   | 0    | 0    | 155  | 0    | 453  | 30   | 988  | 0    | 0    | 1175 | 563  |
| Future Volume (veh/h)               | 0   | 0    | 0    | 155  | 0    | 453  | 30   | 988  | 0    | 0    | 1175 | 563  |
| Number                              |     |      |      | 3    | 8    | 18   | 5    | 2    | 12   | 1    | 6    | 16   |
| Initial Q, veh                      |     |      |      | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Lane Width Adj.                     |     |      |      | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped-Bike Adj (A <sub>pbT</sub> )    |     |      |      | 1.00 |      | 1.00 | 1.00 |      | 1.00 | 1.00 |      | 1.00 |
| Parking Bus Adj                     |     |      |      | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach               |     |      |      | No   |      |      |      | No   |      |      |      | No   |
| Lanes Open During Work Zone         |     |      |      |      |      |      |      |      |      |      |      |      |
| Adj Sat Flow, veh/h/ln              |     |      |      | 1723 | 0    | 1723 | 1723 | 1870 | 0    | 0    | 1870 | 1723 |
| Adj Flow Rate, veh/h                |     |      |      | 168  | 0    | 492  | 33   | 1074 | 0    | 0    | 1277 | 612  |
| Peak Hour Factor                    |     |      |      | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, %                |     |      |      | 2    | 0    | 2    | 2    | 2    | 0    | 0    | 2    | 2    |
| Opposing Right Turn Influence       |     |      |      | Yes  |      |      | Yes  |      |      | No   |      |      |
| Cap, veh/h                          |     |      |      | 714  | 0    | 576  | 41   | 2445 | 0    | 0    | 3159 | 903  |
| HCM Platoon Ratio                   |     |      |      | 1.00 | 1.00 | 1.00 | 0.33 | 0.33 | 1.00 | 1.00 | 1.00 | 1.00 |
| Prop Arrive On Green                |     |      |      | 0.22 | 0.00 | 0.22 | 0.01 | 0.23 | 0.00 | 0.00 | 0.62 | 0.62 |
| Unsig. Movement Delay               |     |      |      |      |      |      |      |      |      |      |      |      |
| Ln Grp Delay, s/veh                 |     |      |      | 28.8 | 0.0  | 42.4 | 71.0 | 20.4 | 0.0  | 0.0  | 9.1  | 15.3 |
| Ln Grp LOS                          |     |      |      | C    |      | D    | E    | C    |      |      | A    | B    |
| Approach Vol, veh/h                 |     |      |      | 660  |      |      |      | 1107 |      |      |      | 1889 |
| Approach Delay, s/veh               |     |      |      | 38.9 |      |      |      | 21.9 |      |      |      | 11.1 |
| Approach LOS                        |     |      |      | D    |      |      |      | C    |      |      |      | B    |
| Timer:                              | 1   | 2    | 3    | 4    | 5    | 6    | 7    | 8    |      |      |      |      |
| Assigned Phs                        |     | 2    | 8    |      | 5    | 6    |      |      |      |      |      |      |
| Case No                             |     | 4.0  | 9.0  |      | 2.0  | 7.0  |      |      |      |      |      |      |
| Phs Duration (G+Y+Rc), s            |     | 65.9 | 24.1 |      | 6.2  | 59.7 |      |      |      |      |      |      |
| Change Period (Y+Rc), s             |     | 5.5  | 4.0  |      | 4.0  | 5.5  |      |      |      |      |      |      |
| Max Green (Gmax), s                 |     | 56.5 | 24.0 |      | 6.0  | 46.5 |      |      |      |      |      |      |
| Max Allow Headway (MAH), s          |     | 4.0  | 4.3  |      | 4.1  | 4.1  |      |      |      |      |      |      |
| Max Q Clear (g <sub>c</sub> +I1), s |     | 25.4 | 18.5 |      | 3.8  | 26.8 |      |      |      |      |      |      |
| Green Ext Time (g <sub>e</sub> ), s |     | 5.3  | 1.5  |      | 0.0  | 9.3  |      |      |      |      |      |      |
| Prob of Phs Call (p <sub>c</sub> )  |     | 1.00 | 1.00 |      | 0.56 | 1.00 |      |      |      |      |      |      |
| Prob of Max Out (p <sub>x</sub> )   |     | 0.00 | 0.69 |      | 1.00 | 0.32 |      |      |      |      |      |      |
| Left-Turn Movement Data             |     |      |      |      |      |      |      |      |      |      |      |      |
| Assigned Mvmt                       |     |      |      | 3    |      | 5    | 1    |      |      |      |      |      |
| Mvmt Sat Flow, veh/h                |     |      |      | 3183 |      | 1641 | 0    |      |      |      |      |      |
| Through Movement Data               |     |      |      |      |      |      |      |      |      |      |      |      |
| Assigned Mvmt                       |     | 2    | 8    |      |      | 6    |      |      |      |      |      |      |
| Mvmt Sat Flow, veh/h                |     | 3647 | 0    |      |      | 5274 |      |      |      |      |      |      |
| Right-Turn Movement Data            |     |      |      |      |      |      |      |      |      |      |      |      |
| Assigned Mvmt                       |     |      | 12   | 18   |      |      | 16   |      |      |      |      |      |
| Mvmt Sat Flow, veh/h                |     |      | 0    | 2569 |      |      | 1460 |      |      |      |      |      |
| Left Lane Group Data                |     |      |      |      |      |      |      |      |      |      |      |      |
| Assigned Mvmt                       | 0   | 0    | 3    | 0    | 5    | 1    | 0    | 0    |      |      |      |      |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

PM 2024  
07/16/2024

|                                     |      |      |      |          |      |      |      |      |
|-------------------------------------|------|------|------|----------|------|------|------|------|
| Lane Assignment                     | L    |      |      | L (Prot) |      |      |      |      |
| Lanes in Grp                        | 0    | 0    | 2    | 0        | 1    | 0    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 168  | 0        | 33   | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 1591 | 0        | 1641 | 0    | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 3.9  | 0.0      | 1.8  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 3.9  | 0.0      | 1.8  | 0.0  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 1591 | 0        | 0    | 0    | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0        | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 55.7 | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 1.00 | 0.00     | 1.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 714  | 0        | 41   | 0    | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.24 | 0.00     | 0.81 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 852  | 0        | 109  | 0    | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 1.00 | 0.00     | 0.88 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 28.6 | 0.0      | 44.4 | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.2  | 0.0      | 26.6 | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 28.8 | 0.0      | 71.0 | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 1.4  | 0.0      | 0.7  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0      | 0.3  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 0.00 | 1.00 | 0.00     | 1.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 1.4  | 0.0      | 1.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.13 | 0.00     | 0.06 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0        | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 8    | 0    | 0    | 6    | 0    | 0    |
| Lane Assignment             | T    |      |      | T    |      |      |      |      |
| Lanes in Grp                | 0    | 2    | 0    | 0    | 0    | 3    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 1074 | 0    | 0    | 0    | 1277 | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1777 | 0    | 0    | 0    | 1702 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 23.4 | 0.0  | 0.0  | 0.0  | 11.4 | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 23.4 | 0.0  | 0.0  | 0.0  | 11.4 | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 2445 | 0    | 0    | 0    | 3159 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.44 | 0.00 | 0.00 | 0.00 | 0.40 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 2445 | 0    | 0    | 0    | 3159 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.88 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 19.9 | 0.0  | 0.0  | 0.0  | 8.7  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.5  | 0.0  | 0.0  | 0.0  | 0.4  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 20.4 | 0.0  | 0.0  | 0.0  | 9.1  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 10.7 | 0.0  | 0.0  | 0.0  | 3.1  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

PM 2024  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 10.9 | 0.0  | 0.0  | 0.0  | 3.2  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.50 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 18   | 0    | 0    | 16   | 0    | 0    |
| Lane Assignment                  | R    |      |      | R    |      |      |      |      |
| Lanes in Grp                     | 0    | 0    | 2    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 0    | 492  | 0    | 0    | 612  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 0    | 1285 | 0    | 0    | 1460 | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 0.0  | 16.5 | 0.0  | 0.0  | 24.8 | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 0.0  | 16.5 | 0.0  | 0.0  | 24.8 | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 0    | 576  | 0    | 0    | 903  | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.00 | 0.85 | 0.00 | 0.00 | 0.68 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 0    | 688  | 0    | 0    | 903  | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 0.0  | 33.5 | 0.0  | 0.0  | 11.3 | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.0  | 8.9  | 0.0  | 0.0  | 4.1  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 0.0  | 42.4 | 0.0  | 0.0  | 15.3 | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.0  | 4.7  | 0.0  | 0.0  | 5.8  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.0  | 0.7  | 0.0  | 0.0  | 1.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.0  | 5.4  | 0.0  | 0.0  | 6.9  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.00 | 0.33 | 0.00 | 0.00 | 1.40 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 19.4 |
| HCM 7th LOS                  | B    |

# HCM 7th Signalized Intersection Capacity Analysis

## 2: 12th Ave & SR 198 WB EB Ramps

PM 2024  
07/16/2024

|                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                               |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |  |                                                                                     |                                                                                     |  |  |
| Traffic Volume (veh/h)        | 437                                                                               | 0                                                                                 | 34                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 581                                                                                 | 115                                                                                 | 0                                                                                   | 817                                                                                 | 0                                                                                   |
| Future Volume (veh/h)         | 437                                                                               | 0                                                                                 | 34                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 581                                                                                 | 115                                                                                 | 0                                                                                   | 817                                                                                 | 0                                                                                   |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                |                                                                                   |                                                                                   |                                                                                   | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 0                                                                                 | 1723                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1870                                                                                | 1723                                                                                | 0                                                                                   | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 475                                                                               | 0                                                                                 | 37                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 632                                                                                 | 125                                                                                 | 0                                                                                   | 888                                                                                 | 0                                                                                   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 0                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Cap, veh/h                    | 598                                                                               | 0                                                                                 | 274                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2143                                                                                | 423                                                                                 | 0                                                                                   | 2574                                                                                | 1057                                                                                |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 2.00                                                                                | 2.00                                                                                | 1.00                                                                                | 2.00                                                                                | 2.00                                                                                |
| Prop Arrive On Green          | 0.19                                                                              | 0.00                                                                              | 0.19                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 37.3                                                                              | 0.0                                                                               | 30.7                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.0                                                                                 | 0.3                                                                                 | 0.0                                                                                 |
| Ln Grp LOS                    | D                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     | A                                                                                   | A                                                                                   |                                                                                     | A                                                                                   |                                                                                     |
| Approach Vol, veh/h           | 512                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 757                                                                                 |                                                                                     |                                                                                     | 888                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh         | 36.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.5                                                                                 |                                                                                     |                                                                                     | 0.3                                                                                 |                                                                                     |                                                                                     |
| Approach LOS                  | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Timer:                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       | 8.0                                                                               |                                                                                   | 9.0                                                                               |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 69.2                                                                              |                                                                                   | 20.8                                                                              |                                                                                   | 69.2                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | 5.5                                                                               |                                                                                   | 4.0                                                                               |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           | 48.5                                                                              |                                                                                   | 32.0                                                                              |                                                                                   | 48.5                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    | 4.0                                                                               |                                                                                   | 4.1                                                                               |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       | 2.0                                                                               |                                                                                   | 14.8                                                                              |                                                                                   | 2.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       | 2.9                                                                               |                                                                                   | 2.0                                                                               |                                                                                   | 4.2                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         | 0.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 5                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 1                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 0                                                                                 |                                                                                   | 3183                                                                              |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 3052                                                                              |                                                                                   | 0                                                                                 |                                                                                   | 3647                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 12                                                                                |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 584                                                                               |                                                                                   | 1460                                                                              |                                                                                   | 1460                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 2: 12th Ave & SR 198 WB EB Ramps

PM 2024  
07/16/2024

|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     | L    |      |      |      |      |      |      |      |
| Lanes in Grp                        | 0    | 0    | 0    | 2    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 0    | 475  | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 0    | 1591 | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.0  | 12.8 | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.0  | 12.8 | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 0    | 1591 | 0    | 0    | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 65.2 | 0.0  | 0.0  | 0.0  | 65.2 | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 0    | 598  | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.00 | 0.79 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 0    | 1135 | 0    | 0    | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 0.0  | 34.9 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.0  | 2.4  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 0.0  | 37.3 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.0  | 4.5  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.0  | 4.7  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.00 | 0.24 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 0    |
| Lane Assignment             | T    |      |      |      | T    |      |      |      |
| Lanes in Grp                | 0    | 1    | 0    | 0    | 0    | 2    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 379  | 0    | 0    | 0    | 888  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1777 | 0    | 0    | 0    | 1777 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 1287 | 0    | 0    | 0    | 2574 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.29 | 0.00 | 0.00 | 0.00 | 0.34 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 1287 | 0    | 0    | 0    | 2574 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.93 | 0.00 | 0.00 | 0.00 | 0.93 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.5  | 0.0  | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.5  | 0.0  | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 2: 12th Ave & SR 198 WB EB Ramps

PM 2024  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      | R    |      |      |      |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 378  | 0    | 37   | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1765 | 0    | 1460 | 0    | 1460 | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 0.0  | 0.0  | 1.9  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 0.0  | 0.0  | 1.9  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.33 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1279 | 0    | 274  | 0    | 1057 | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.30 | 0.00 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1279 | 0    | 521  | 0    | 1057 | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 0.93 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 0.0  | 0.0  | 30.5 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.5  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 0.5  | 0.0  | 30.7 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.0  | 0.0  | 0.6  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.2  | 0.0  | 0.6  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Intersection Summary

|                              |     |
|------------------------------|-----|
| HCM 7th Control Delay, s/veh | 9.1 |
| HCM 7th LOS                  | A   |

| Intersection                |         |        |         |        |         |         |        |
|-----------------------------|---------|--------|---------|--------|---------|---------|--------|
| Intersection Delay, s/veh   | 3.4     |        |         |        |         |         |        |
| Intersection LOS            | A       |        |         |        |         |         |        |
| Approach                    | EB      |        | WB      |        | NB      |         | SB     |
| Entry Lanes                 | 1       |        | 1       |        | 1       |         | 1      |
| Conflicting Circle Lanes    | 1       |        | 1       |        | 1       |         | 1      |
| Adj Approach Flow, veh/h    | 530     |        | 386     |        | 0       |         | 264    |
| Demand Flow Rate, veh/h     | 541     |        | 394     |        | 0       |         | 269    |
| Vehicles Circulating, veh/h | 420     |        | 88      |        | 247     |         | 256    |
| Vehicles Exiting, veh/h     | 100     |        | 159     |        | 377     |         | 88     |
| Ped Vol Crossing Leg, #/h   | 0       |        | 0       |        | 0       |         | 0      |
| Ped Cap Adj                 | 1.000   |        | 1.000   |        | 1.000   |         | 1.000  |
| Approach Delay, s/veh       | 2.4     |        | 3.0     |        | 0.0     |         | 5.7    |
| Approach LOS                | A       |        | A       |        | -       |         | A      |
| Lane                        | Left    | Bypass | Left    | Bypass | Left    | Left    | Bypass |
| Designated Moves            | LT      | R      | LT      | R      | LTR     | LT      | R      |
| Assumed Moves               | LT      |        | LT      |        | LTR     | LT      |        |
| RT Channelized              |         | Free   |         | Free   |         |         | Free   |
| Lane Util                   | 1.000   |        | 1.000   |        | 1.000   | 1.000   |        |
| Follow-Up Headway, s        | 2.609   |        | 2.609   |        | 2.609   | 2.609   |        |
| Critical Headway, s         | 4.976   |        | 4.976   |        | 4.976   | 4.976   |        |
| A (Intercept)               | 1380    |        | 1380    |        | 1380    | 1380    |        |
| B (Slope)                   | 1.02e-3 |        | 1.02e-3 |        | 1.02e-3 | 1.02e-3 |        |
| Entry Flow, veh/h           | 204     | 337    | 256     | 138    | 0       | 264     | 5      |
| Cap Entry Lane, veh/h       | 899     | 1938   | 1261    | 1938   | 1073    | 1063    | 1938   |
| Entry HV Adj Factor         | 0.979   | 0.980  | 0.981   | 0.980  | 1.000   | 0.980   | 0.980  |
| Flow Entry, veh/h           | 200     | 330    | 251     | 135    | 0       | 259     | 5      |
| Cap Entry, veh/h            | 880     | 1900   | 1237    | 1900   | 1073    | 1041    | 1900   |
| V/C Ratio                   | 0.227   | 0.174  | 0.203   | 0.071  | 0.000   | 0.248   | 0.003  |
| Control Delay, s/veh        | 6.4     | 0.0    | 4.7     | 0.0    | 3.4     | 5.8     | 0.0    |
| LOS                         | A       | A      | A       | A      | A       | A       | A      |
| 95th %tile Queue, veh       | 1       | 1      | 1       | 0      | 0       | 1       | 0      |

# HCM 7th Signalized Intersection Capacity Analysis

## 4: SR 198 EB Ramps & Hanford Armona Rd

PM 2024  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)        | 224                                                                               | 3                                                                                 | 145                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 262                                                                                 | 33                                                                                  | 145                                                                                 | 196                                                                                 | 0                                                                                   |
| Future Volume (veh/h)         | 224                                                                               | 3                                                                                 | 145                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 262                                                                                 | 33                                                                                  | 145                                                                                 | 196                                                                                 | 0                                                                                   |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                |                                                                                   |                                                                                   |                                                                                   | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         |                                                                                   | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 0                                                                                   |
| Adj Flow Rate, veh/h          | 243                                                                               | 3                                                                                 | 158                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 285                                                                                 | 36                                                                                  | 158                                                                                 | 213                                                                                 | 0                                                                                   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Cap, veh/h                    | 295                                                                               | 0                                                                                 | 263                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1190                                                                                | 150                                                                                 | 462                                                                                 | 601                                                                                 | 0                                                                                   |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Prop Arrive On Green          | 0.18                                                                              | 0.18                                                                              | 0.18                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 0.73                                                                                | 0.71                                                                                | 0.73                                                                                | 0.73                                                                                | 0.00                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 41.3                                                                              | 0.0                                                                               | 36.1                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 4.4                                                                                 | 5.6                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Ln Grp LOS                    | D                                                                                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     | A                                                                                   | A                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h           |                                                                                   | 401                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | 321                                                                                 |                                                                                     |                                                                                     | 371                                                                                 |                                                                                     |
| Approach Delay, s/veh         |                                                                                   | 39.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | 4.4                                                                                 |                                                                                     |                                                                                     | 5.6                                                                                 |                                                                                     |
| Approach LOS                  |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Timer:                        |                                                                                   | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                   | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       |                                                                                   |                                                                                   | 8.0                                                                               |                                                                                   | 9.0                                                                               |                                                                                   | 8.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      |                                                                                   |                                                                                   | 69.8                                                                              |                                                                                   | 20.2                                                                              |                                                                                   | 69.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       |                                                                                   |                                                                                   | 5.5                                                                               |                                                                                   | 4.1                                                                               |                                                                                   | 5.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           |                                                                                   |                                                                                   | 51.5                                                                              |                                                                                   | 28.9                                                                              |                                                                                   | 51.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    |                                                                                   |                                                                                   | 4.0                                                                               |                                                                                   | 4.2                                                                               |                                                                                   | 4.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       |                                                                                   |                                                                                   | 7.2                                                                               |                                                                                   | 14.8                                                                              |                                                                                   | 12.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       |                                                                                   |                                                                                   | 1.2                                                                               |                                                                                   | 1.3                                                                               |                                                                                   | 1.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        |                                                                                   |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         |                                                                                   |                                                                                   | 0.00                                                                              |                                                                                   | 0.01                                                                              |                                                                                   | 0.00                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 5                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 1                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   | 1641                                                                              |                                                                                   | 553                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 1628                                                                              |                                                                                   | 0                                                                                 |                                                                                   | 823                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 12                                                                                |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 206                                                                               |                                                                                   | 1460                                                                              |                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report



# HCM 7th Signalized Intersection Capacity Analysis

## 4: SR 198 EB Ramps & Hanford Armona Rd

PM 2024  
07/16/2024

| Lane Assignment                     |      |      |      | L    | L+T  |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lanes in Grp                        | 0    | 0    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 0    | 243  | 0    | 371  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 0    | 1641 | 0    | 1376 | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.0  | 12.8 | 0.0  | 5.6  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.0  | 12.8 | 0.0  | 10.8 | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 0    | 1641 | 0    | 1075 | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 65.8 | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 60.6 | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 5.6  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 65.8 | 0.0  | 0.0  | 0.0  | 2.7  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 2.7  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.43 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 0    | 295  | 0    | 1063 | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.00 | 0.82 | 0.00 | 0.35 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 0    | 529  | 0    | 1063 | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 0.0  | 35.5 | 0.0  | 4.7  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.0  | 5.7  | 0.0  | 0.9  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 0.0  | 41.3 | 0.0  | 5.6  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.0  | 4.7  | 0.0  | 1.2  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.5  | 0.0  | 0.3  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.0  | 5.2  | 0.0  | 1.5  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.00 | 0.37 | 0.00 | 0.31 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 0    |
| Lane Assignment             |      |      |      |      |      |      |      |      |
| Lanes in Grp                | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 4: SR 198 EB Ramps & Hanford Armona Rd

PM 2024  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      |      |      |      |      |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 321  | 0    | 158  | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1833 | 0    | 1460 | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 5.2  | 0.0  | 9.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 5.2  | 0.0  | 9.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.11 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1341 | 0    | 263  | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.24 | 0.00 | 0.60 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1341 | 0    | 470  | 0    | 0    | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 4.0  | 0.0  | 33.9 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.4  | 0.0  | 2.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 4.4  | 0.0  | 36.1 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 1.1  | 0.0  | 2.9  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.2  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 1.2  | 0.0  | 3.1  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.11 | 0.00 | 0.22 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 17.6 |
| HCM 7th LOS                  | B    |

| Intersection              |        |      |      |        |      |      |        |       |       |        |       |       |
|---------------------------|--------|------|------|--------|------|------|--------|-------|-------|--------|-------|-------|
| Int Delay, s/veh          | 3.4    |      |      |        |      |      |        |       |       |        |       |       |
| Movement                  | EBL    | EBT  | EBR  | WBL    | WBT  | WBR  | NBL    | NBT   | NBR   | SBL    | SBT   | SBR   |
| Lane Configurations       |        | ↕    |      |        | ↕    |      |        | ↕     |       |        | ↕     |       |
| Traffic Vol, veh/h        | 0      | 259  | 83   | 33     | 204  | 0    | 93     | 0     | 36    | 0      | 0     | 0     |
| Future Vol, veh/h         | 0      | 259  | 83   | 33     | 204  | 0    | 93     | 0     | 36    | 0      | 0     | 0     |
| Conflicting Peds, #/hr    | 0      | 0    | 0    | 0      | 0    | 0    | 0      | 0     | 0     | 0      | 0     | 0     |
| Sign Control              | Free   | Free | Free | Free   | Free | Free | Stop   | Stop  | Stop  | Stop   | Stop  | Stop  |
| RT Channelized            | -      | -    | None | -      | -    | None | -      | -     | None  | -      | -     | None  |
| Storage Length            | -      | -    | -    | -      | -    | -    | -      | -     | -     | -      | -     | -     |
| Veh in Median Storage, #  | -      | 0    | -    | -      | 0    | -    | -      | 0     | -     | -      | 0     | -     |
| Grade, %                  | -      | 0    | -    | -      | 0    | -    | -      | 0     | -     | -      | 0     | -     |
| Peak Hour Factor          | 92     | 92   | 92   | 92     | 92   | 92   | 92     | 92    | 92    | 92     | 92    | 92    |
| Heavy Vehicles, %         | 2      | 2    | 2    | 2      | 2    | 2    | 2      | 2     | 2     | 2      | 2     | 2     |
| Mvmt Flow                 | 0      | 282  | 90   | 36     | 222  | 0    | 101    | 0     | 39    | 0      | 0     | 0     |
| Major/Minor               | Major1 |      |      | Major2 |      |      | Minor1 |       |       | Minor2 |       |       |
| Conflicting Flow All      | 222    | 0    | 0    | 372    | 0    | 0    | 620    | 620   | 327   | 575    | 665   | 222   |
| Stage 1                   | -      | -    | -    | -      | -    | -    | 327    | 327   | -     | 293    | 293   | -     |
| Stage 2                   | -      | -    | -    | -      | -    | -    | 293    | 293   | -     | 282    | 372   | -     |
| Critical Hdwy             | 4.12   | -    | -    | 4.12   | -    | -    | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1       | -      | -    | -    | -      | -    | -    | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2       | -      | -    | -    | -      | -    | -    | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy            | 2.218  | -    | -    | 2.218  | -    | -    | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver        | 1347   | -    | -    | 1187   | -    | -    | 400    | 404   | 715   | 429    | 381   | 818   |
| Stage 1                   | -      | -    | -    | -      | -    | -    | 686    | 648   | -     | 715    | 670   | -     |
| Stage 2                   | -      | -    | -    | -      | -    | -    | 715    | 670   | -     | 725    | 619   | -     |
| Platoon blocked, %        | -      | -    | -    | -      | -    | -    | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver        | 1347   | -    | -    | 1187   | -    | -    | 386    | 390   | 715   | 392    | 367   | 818   |
| Mov Cap-2 Maneuver        | -      | -    | -    | -      | -    | -    | 386    | 390   | -     | 392    | 367   | -     |
| Stage 1                   | -      | -    | -    | -      | -    | -    | 686    | 648   | -     | 690    | 647   | -     |
| Stage 2                   | -      | -    | -    | -      | -    | -    | 690    | 647   | -     | 686    | 619   | -     |
| Approach                  | EB     |      |      | WB     |      |      | NB     |       |       | SB     |       |       |
| HCM Control Delay, s/v    | 0      |      |      | 1.13   |      |      | 16.83  |       |       | 0      |       |       |
| HCM LOS                   |        |      |      |        |      |      | C      |       |       | A      |       |       |
| Minor Lane/Major Mvmt     | NBLn1  | EBL  | EBT  | EBR    | WBL  | WBT  | WBR    | SBLn1 |       |        |       |       |
| Capacity (veh/h)          | 443    | 1347 | -    | -      | 251  | -    | -      | -     |       |        |       |       |
| HCM Lane V/C Ratio        | 0.316  | -    | -    | -      | 0.03 | -    | -      | -     |       |        |       |       |
| HCM Control Delay (s/veh) | 16.8   | 0    | -    | -      | 8.1  | 0    | -      | 0     |       |        |       |       |
| HCM Lane LOS              | C      | A    | -    | -      | A    | A    | -      | A     |       |        |       |       |
| HCM 95th %tile Q(veh)     | 1.3    | 0    | -    | -      | 0.1  | -    | -      | -     |       |        |       |       |

# HCM 7th Signalized Intersection Capacity Analysis

## 6: 12th Ave & Hanford Armona Rd

PM 2024  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |  |  |  |  |  |   |  |  |  |  |  |
| Traffic Volume (veh/h)        | 98                                                                                | 194                                                                               | 44                                                                                | 36                                                                                | 154                                                                               | 247                                                                               | 40                                                                                  | 308                                                                                 | 37                                                                                  | 328                                                                                 | 338                                                                                 | 109                                                                                 |
| Future Volume (veh/h)         | 98                                                                                | 194                                                                               | 44                                                                                | 36                                                                                | 154                                                                               | 247                                                                               | 40                                                                                  | 308                                                                                 | 37                                                                                  | 328                                                                                 | 338                                                                                 | 109                                                                                 |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                                | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 107                                                                               | 211                                                                               | 48                                                                                | 39                                                                                | 167                                                                               | 268                                                                               | 43                                                                                  | 335                                                                                 | 40                                                                                  | 357                                                                                 | 367                                                                                 | 118                                                                                 |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Cap, veh/h                    | 122                                                                               | 287                                                                               | 224                                                                               | 235                                                                               | 416                                                                               | 325                                                                               | 202                                                                                 | 1823                                                                                | 216                                                                                 | 453                                                                                 | 1068                                                                                | 339                                                                                 |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                                | 2.00                                                                                | 2.00                                                                                | 1.67                                                                                | 1.67                                                                                | 1.67                                                                                |
| Prop Arrive On Green          | 0.07                                                                              | 0.15                                                                              | 0.15                                                                              | 0.14                                                                              | 0.22                                                                              | 0.22                                                                              | 0.25                                                                                | 1.00                                                                                | 1.00                                                                                | 0.67                                                                                | 0.67                                                                                | 0.64                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 87.2                                                                              | 40.0                                                                              | 33.8                                                                              | 34.1                                                                              | 30.5                                                                              | 44.1                                                                              | 31.0                                                                                | 0.4                                                                                 | 0.4                                                                                 | 26.4                                                                                | 10.9                                                                                | 11.5                                                                                |
| Ln Grp LOS                    | F                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | C                                                                                   | A                                                                                   | A                                                                                   | C                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h           |                                                                                   | 366                                                                               |                                                                                   |                                                                                   | 474                                                                               |                                                                                   |                                                                                     | 418                                                                                 |                                                                                     |                                                                                     | 842                                                                                 |                                                                                     |
| Approach Delay, s/veh         |                                                                                   | 53.0                                                                              |                                                                                   |                                                                                   | 38.5                                                                              |                                                                                   |                                                                                     | 3.5                                                                                 |                                                                                     |                                                                                     | 17.6                                                                                |                                                                                     |
| Approach LOS                  |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | A                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer:                        |                                                                                   | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                   | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  |                                                                                   | 2                                                                                 | 4                                                                                 | 3                                                                                 | 6                                                                                 | 5                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       |                                                                                   | 4.0                                                                               | 3.0                                                                               | 2.0                                                                               | 6.4                                                                               | 2.0                                                                               | 2.0                                                                                 | 3.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      |                                                                                   | 55.3                                                                              | 17.8                                                                              | 16.9                                                                              | 40.2                                                                              | 15.1                                                                              | 10.7                                                                                | 24.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       |                                                                                   | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                                 | 5.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           |                                                                                   | 45.4                                                                              | 22.9                                                                              | 5.2                                                                               | 35.9                                                                              | 4.0                                                                               | 5.2                                                                                 | 22.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    |                                                                                   | 4.0                                                                               | 4.1                                                                               | 4.1                                                                               | 4.6                                                                               | 4.1                                                                               | 4.1                                                                                 | 4.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       |                                                                                   | 2.0                                                                               | 11.7                                                                              | 3.9                                                                               | 33.8                                                                              | 3.9                                                                               | 7.8                                                                                 | 17.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       |                                                                                   | 1.3                                                                               | 0.6                                                                               | 0.0                                                                               | 0.9                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        |                                                                                   | 1.00                                                                              | 1.00                                                                              | 0.62                                                                              | 1.00                                                                              | 0.66                                                                              | 0.93                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         |                                                                                   | 0.00                                                                              | 0.01                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.67                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   |                                                                                   |                                                                                   | 3                                                                                 | 1                                                                                 | 5                                                                                 | 7                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   |                                                                                   | 1641                                                                              | 928                                                                               | 1641                                                                              | 1641                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 2                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 3200                                                                              | 1870                                                                              |                                                                                   | 2654                                                                              |                                                                                   | 1870                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 12                                                                                | 14                                                                                |                                                                                   | 16                                                                                |                                                                                   | 18                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 379                                                                               | 1460                                                                              |                                                                                   | 842                                                                               |                                                                                   | 1460                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 3                                                                                 | 1                                                                                 | 5                                                                                 | 7                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 6: 12th Ave & Hanford Armona Rd

PM 2024  
07/16/2024

| Lane Assignment                     | L (Prot) |      |      | L    | L (Prot) | L (Prot) | L (Prot) |      |
|-------------------------------------|----------|------|------|------|----------|----------|----------|------|
| Lanes in Grp                        | 0        | 0    | 0    | 1    | 1        | 1        | 1        | 0    |
| Grp Vol (v), veh/h                  | 0        | 0    | 0    | 39   | 357      | 43       | 107      | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0        | 0    | 0    | 1641 | 928      | 1641     | 1641     | 0    |
| Q Serve Time (g_s), s               | 0.0      | 0.0  | 0.0  | 1.9  | 31.8     | 1.9      | 5.8      | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0      | 0.0  | 0.0  | 1.9  | 31.8     | 1.9      | 5.8      | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0        | 0    | 0    | 0    | 928      | 0        | 0        | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0        | 0    | 0    | 0    | 0        | 0        | 0        | 0    |
| Perm LT Eff Green (g_p), s          | 0.0      | 0.0  | 0.0  | 0.0  | 36.2     | 0.0      | 0.0      | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0      | 0.0  | 0.0  | 0.0  | 36.2     | 0.0      | 0.0      | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0      | 0.0  | 0.0  | 0.0  | 31.8     | 0.0      | 0.0      | 0.0  |
| Time to First Blk (g_f), s          | 0.0      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0      | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0      | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00     | 0.00 | 0.00 | 1.00 | 1.00     | 1.00     | 1.00     | 0.00 |
| Lane Grp Cap (c), veh/h             | 0        | 0    | 0    | 235  | 453      | 202      | 122      | 0    |
| V/C Ratio (X)                       | 0.00     | 0.00 | 0.00 | 0.17 | 0.79     | 0.21     | 0.88     | 0.00 |
| Avail Cap (c_a), veh/h              | 0        | 0    | 0    | 235  | 466      | 202      | 122      | 0    |
| Upstream Filter (I)                 | 0.00     | 0.00 | 0.00 | 0.95 | 0.95     | 0.95     | 1.00     | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0      | 0.0  | 0.0  | 33.8 | 14.0     | 30.5     | 41.2     | 0.0  |
| Incr Delay (d2), s/veh              | 0.0      | 0.0  | 0.0  | 0.3  | 12.4     | 0.5      | 46.0     | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0      | 0.0  |
| Control Delay (d), s/veh            | 0.0      | 0.0  | 0.0  | 34.1 | 26.4     | 31.0     | 87.2     | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0      | 0.0  | 0.0  | 0.7  | 2.7      | 0.7      | 2.2      | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0      | 0.0  | 0.0  | 0.0  | 1.6      | 0.0      | 1.6      | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0      | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00     | 0.00 | 0.00 | 1.00 | 1.00     | 1.00     | 1.00     | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0      | 0.0  | 0.0  | 0.7  | 4.3      | 0.7      | 3.7      | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00     | 0.00 | 0.00 | 0.36 | 0.54     | 0.09     | 0.63     | 0.00 |
| Initial Q (Qb), veh                 | 0.0      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0      | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0      | 0.0  |
| Sat Delay (ds), s/veh               | 0.0      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0      | 0.0  |
| Sat Q (Qs), veh                     | 0.0      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0      | 0.0  |
| Sat Cap (cs), veh/h                 | 0        | 0    | 0    | 0    | 0        | 0        | 0        | 0    |
| Initial Q Clear Time (tc), h        | 0.0      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0      | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 4    | 0    | 6    | 0    | 0    | 8    |
| Lane Assignment             |      | T    | T    |      | T    |      |      | T    |
| Lanes in Grp                | 0    | 1    | 1    | 0    | 1    | 0    | 0    | 1    |
| Grp Vol (v), veh/h          | 0    | 185  | 211  | 0    | 244  | 0    | 0    | 167  |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1777 | 1870 | 0    | 1777 | 0    | 0    | 1870 |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 9.7  | 0.0  | 5.3  | 0.0  | 0.0  | 6.9  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 9.7  | 0.0  | 5.3  | 0.0  | 0.0  | 6.9  |
| Lane Grp Cap (c), veh/h     | 0    | 1012 | 287  | 0    | 715  | 0    | 0    | 416  |
| V/C Ratio (X)               | 0.00 | 0.18 | 0.73 | 0.00 | 0.34 | 0.00 | 0.00 | 0.40 |
| Avail Cap (c_a), veh/h      | 0    | 1012 | 507  | 0    | 738  | 0    | 0    | 507  |
| Upstream Filter (I)         | 0.00 | 0.95 | 1.00 | 0.00 | 0.95 | 0.00 | 0.00 | 0.95 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 36.3 | 0.0  | 9.7  | 0.0  | 0.0  | 29.9 |
| Incr Delay (d2), s/veh      | 0.0  | 0.4  | 3.6  | 0.0  | 1.2  | 0.0  | 0.0  | 0.6  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.4  | 40.0 | 0.0  | 10.9 | 0.0  | 0.0  | 30.5 |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 4.1  | 0.0  | 1.6  | 0.0  | 0.0  | 2.8  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 6: 12th Ave & Hanford Armona Rd

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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.1  | 0.3  | 0.0  | 0.2  | 0.0  | 0.0  | 0.1  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.1  | 4.4  | 0.0  | 1.8  | 0.0  | 0.0  | 2.9  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.02 | 0.00 | 0.03 | 0.00 | 0.00 | 0.01 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 14   | 0    | 16   | 0    | 0    | 18   |
| Lane Assignment                  | T+R  |      | R    | T+R  |      | R    |      |      |
| Lanes in Grp                     | 0    | 1    | 1    | 0    | 1    | 0    | 0    | 1    |
| Grp Vol (v), veh/h               | 0    | 190  | 48   | 0    | 241  | 0    | 0    | 268  |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1802 | 1460 | 0    | 1719 | 0    | 0    | 1460 |
| Q Serve Time (g_s), s            | 0.0  | 0.0  | 2.6  | 0.0  | 5.6  | 0.0  | 0.0  | 15.7 |
| Cycle Q Clear Time (g_c), s      | 0.0  | 0.0  | 2.6  | 0.0  | 5.6  | 0.0  | 0.0  | 15.7 |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.21 | 1.00 | 0.00 | 0.49 | 0.00 | 0.00 | 1.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1027 | 224  | 0    | 691  | 0    | 0    | 325  |
| V/C Ratio (X)                    | 0.00 | 0.19 | 0.21 | 0.00 | 0.35 | 0.00 | 0.00 | 0.82 |
| Avail Cap (c_a), veh/h           | 0    | 1027 | 396  | 0    | 714  | 0    | 0    | 396  |
| Upstream Filter (I)              | 0.00 | 0.95 | 1.00 | 0.00 | 0.95 | 0.00 | 0.00 | 0.95 |
| Uniform Delay (d1), s/veh        | 0.0  | 0.0  | 33.3 | 0.0  | 10.1 | 0.0  | 0.0  | 33.3 |
| Incr Delay (d2), s/veh           | 0.0  | 0.4  | 0.5  | 0.0  | 1.3  | 0.0  | 0.0  | 10.8 |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 0.4  | 33.8 | 0.0  | 11.5 | 0.0  | 0.0  | 44.1 |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.0  | 0.9  | 0.0  | 1.6  | 0.0  | 0.0  | 5.1  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.1  | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  | 1.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.1  | 0.9  | 0.0  | 1.9  | 0.0  | 0.0  | 6.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.00 | 0.22 | 0.00 | 0.03 | 0.00 | 0.00 | 3.06 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 25.7 |
| HCM 7th LOS                  | C    |

# HCM 7th Signalized Intersection Capacity Analysis

## 7: 11th Ave & Hanford Armona Rd

PM 2024  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |  |  |  |  |                                                                                   |   |  |  |  |  |  |
| Traffic Volume (veh/h)        | 146                                                                               | 219                                                                               | 37                                                                                | 83                                                                                | 215                                                                               | 91                                                                                | 59                                                                                  | 357                                                                                 | 75                                                                                  | 112                                                                                 | 332                                                                                 | 190                                                                                 |
| Future Volume (veh/h)         | 146                                                                               | 219                                                                               | 37                                                                                | 83                                                                                | 215                                                                               | 91                                                                                | 59                                                                                  | 357                                                                                 | 75                                                                                  | 112                                                                                 | 332                                                                                 | 190                                                                                 |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                                | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 159                                                                               | 238                                                                               | 40                                                                                | 90                                                                                | 234                                                                               | 99                                                                                | 64                                                                                  | 388                                                                                 | 82                                                                                  | 122                                                                                 | 361                                                                                 | 207                                                                                 |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Cap, veh/h                    | 508                                                                               | 1026                                                                              | 801                                                                               | 570                                                                               | 684                                                                               | 289                                                                               | 243                                                                                 | 678                                                                                 | 529                                                                                 | 247                                                                                 | 678                                                                                 | 529                                                                                 |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Prop Arrive On Green          | 0.55                                                                              | 0.55                                                                              | 0.55                                                                              | 0.55                                                                              | 0.55                                                                              | 0.53                                                                              | 0.36                                                                                | 0.36                                                                                | 0.36                                                                                | 0.36                                                                                | 0.36                                                                                | 0.36                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 17.8                                                                              | 10.9                                                                              | 9.5                                                                               | 13.8                                                                              | 0.0                                                                               | 12.4                                                                              | 31.2                                                                                | 23.8                                                                                | 19.5                                                                                | 35.5                                                                                | 23.3                                                                                | 21.8                                                                                |
| Ln Grp LOS                    | B                                                                                 | B                                                                                 | A                                                                                 | B                                                                                 |                                                                                   | B                                                                                 | C                                                                                   | C                                                                                   | B                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h           | 437                                                                               |                                                                                   |                                                                                   | 423                                                                               |                                                                                   |                                                                                   | 534                                                                                 |                                                                                     |                                                                                     | 690                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh         | 13.3                                                                              |                                                                                   |                                                                                   | 12.7                                                                              |                                                                                   |                                                                                   | 24.0                                                                                |                                                                                     |                                                                                     | 25.0                                                                                |                                                                                     |                                                                                     |
| Approach LOS                  | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer:                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |
| Case No                       | 5.0                                                                               |                                                                                   |                                                                                   | 5.0                                                                               |                                                                                   |                                                                                   | 5.0                                                                                 |                                                                                     |                                                                                     | 6.0                                                                                 |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 36.6                                                                              |                                                                                   |                                                                                   | 53.4                                                                              |                                                                                   |                                                                                   | 36.6                                                                                |                                                                                     |                                                                                     | 53.4                                                                                |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | 5.5                                                                               |                                                                                   |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                   | 5.5                                                                                 |                                                                                     |                                                                                     | 5.5                                                                                 |                                                                                     |                                                                                     |
| Max Green (Gmax), s           | 37.5                                                                              |                                                                                   |                                                                                   | 41.5                                                                              |                                                                                   |                                                                                   | 37.5                                                                                |                                                                                     |                                                                                     | 41.5                                                                                |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    | 4.3                                                                               |                                                                                   |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                   | 4.4                                                                                 |                                                                                     |                                                                                     | 4.3                                                                                 |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       | 22.1                                                                              |                                                                                   |                                                                                   | 21.4                                                                              |                                                                                   |                                                                                   | 29.1                                                                                |                                                                                     |                                                                                     | 12.5                                                                                |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       | 1.9                                                                               |                                                                                   |                                                                                   | 1.8                                                                               |                                                                                   |                                                                                   | 2.0                                                                                 |                                                                                     |                                                                                     | 1.7                                                                                 |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         | 0.02                                                                              |                                                                                   |                                                                                   | 0.00                                                                              |                                                                                   |                                                                                   | 0.35                                                                                |                                                                                     |                                                                                     | 0.00                                                                                |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 5                                                                                 |                                                                                   |                                                                                   | 7                                                                                 |                                                                                   |                                                                                   | 1                                                                                   |                                                                                     |                                                                                     | 3                                                                                   |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 777                                                                               |                                                                                   |                                                                                   | 964                                                                               |                                                                                   |                                                                                   | 850                                                                                 |                                                                                     |                                                                                     | 1014                                                                                |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 1870                                                                              |                                                                                   |                                                                                   | 1870                                                                              |                                                                                   |                                                                                   | 1870                                                                                |                                                                                     |                                                                                     | 1248                                                                                |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 12                                                                                |                                                                                   |                                                                                   | 14                                                                                |                                                                                   |                                                                                   | 16                                                                                  |                                                                                     |                                                                                     | 18                                                                                  |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 1460                                                                              |                                                                                   |                                                                                   | 1460                                                                              |                                                                                   |                                                                                   | 1460                                                                                |                                                                                     |                                                                                     | 528                                                                                 |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 3                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 7: 11th Ave & Hanford Armona Rd

PM 2024  
07/16/2024

|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     |      | L    |      | L    |      | L    |      | L    |
| Lanes in Grp                        | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 1    |
| Grp Vol (v), veh/h                  | 0    | 64   | 0    | 159  | 0    | 122  | 0    | 90   |
| Grp Sat Flow (s), veh/h/ln          | 0    | 777  | 0    | 964  | 0    | 850  | 0    | 1014 |
| Q Serve Time (g_s), s               | 0.0  | 6.4  | 0.0  | 9.9  | 0.0  | 12.1 | 0.0  | 4.5  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 20.1 | 0.0  | 19.4 | 0.0  | 27.1 | 0.0  | 10.5 |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 777  | 0    | 964  | 0    | 850  | 0    | 1014 |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 32.6 | 0.0  | 49.4 | 0.0  | 32.6 | 0.0  | 49.4 |
| Perm LT Serve Time (g_u), s         | 0.0  | 18.9 | 0.0  | 39.9 | 0.0  | 17.6 | 0.0  | 43.4 |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 6.4  | 0.0  | 9.9  | 0.0  | 12.1 | 0.0  | 4.5  |
| Time to First Blk (g_f), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Lane Grp Cap (c), veh/h             | 0    | 243  | 0    | 508  | 0    | 247  | 0    | 570  |
| V/C Ratio (X)                       | 0.00 | 0.26 | 0.00 | 0.31 | 0.00 | 0.49 | 0.00 | 0.16 |
| Avail Cap (c_a), veh/h              | 0    | 298  | 0    | 508  | 0    | 307  | 0    | 570  |
| Upstream Filter (I)                 | 0.00 | 1.00 | 0.00 | 0.69 | 0.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 30.6 | 0.0  | 16.7 | 0.0  | 34.0 | 0.0  | 13.2 |
| Incr Delay (d2), s/veh              | 0.0  | 0.6  | 0.0  | 1.1  | 0.0  | 1.5  | 0.0  | 0.6  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 31.2 | 0.0  | 17.8 | 0.0  | 35.5 | 0.0  | 13.8 |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 1.1  | 0.0  | 1.9  | 0.0  | 2.3  | 0.0  | 0.9  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.1  | 0.0  | 0.1  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 1.1  | 0.0  | 2.0  | 0.0  | 2.4  | 0.0  | 1.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.26 | 0.00 | 0.52 | 0.00 | 0.87 | 0.00 | 0.25 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 8    |
| Lane Assignment             |      | T    |      | T    |      | T    |      |      |
| Lanes in Grp                | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 388  | 0    | 238  | 0    | 361  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1870 | 0    | 1870 | 0    | 1870 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 15.0 | 0.0  | 5.9  | 0.0  | 13.7 | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 15.0 | 0.0  | 5.9  | 0.0  | 13.7 | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 678  | 0    | 1026 | 0    | 678  | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.57 | 0.00 | 0.23 | 0.00 | 0.53 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 810  | 0    | 1026 | 0    | 810  | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 1.00 | 0.00 | 0.69 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 23.1 | 0.0  | 10.5 | 0.0  | 22.7 | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.8  | 0.0  | 0.4  | 0.0  | 0.7  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 23.8 | 0.0  | 10.9 | 0.0  | 23.3 | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 5.8  | 0.0  | 2.0  | 0.0  | 5.3  | 0.0  | 0.0  |

Baseline

Synchro 9 Report



# HCM 7th Signalized Intersection Capacity Analysis 7: 11th Ave & Hanford Armona Rd

PM 2024  
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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.1  | 0.0  | 0.1  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 6.0  | 0.0  | 2.1  | 0.0  | 5.5  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.09 | 0.00 | 0.01 | 0.00 | 0.06 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 18   |
| Lane Assignment                  |      | R    |      | R    |      | R    |      | T+R  |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 1    |
| Grp Vol (v), veh/h               | 0    | 82   | 0    | 40   | 0    | 207  | 0    | 333  |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1460 | 0    | 1460 | 0    | 1460 | 0    | 1775 |
| Q Serve Time (g_s), s            | 0.0  | 3.4  | 0.0  | 1.1  | 0.0  | 9.5  | 0.0  | 9.5  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 3.4  | 0.0  | 1.1  | 0.0  | 9.5  | 0.0  | 9.5  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.30 |
| Lane Grp Cap (c), veh/h          | 0    | 529  | 0    | 801  | 0    | 529  | 0    | 974  |
| V/C Ratio (X)                    | 0.00 | 0.15 | 0.00 | 0.05 | 0.00 | 0.39 | 0.00 | 0.34 |
| Avail Cap (c_a), veh/h           | 0    | 633  | 0    | 801  | 0    | 633  | 0    | 974  |
| Upstream Filter (I)              | 0.00 | 1.00 | 0.00 | 0.69 | 0.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 19.4 | 0.0  | 9.4  | 0.0  | 21.3 | 0.0  | 11.4 |
| Incr Delay (d2), s/veh           | 0.0  | 0.1  | 0.0  | 0.1  | 0.0  | 0.5  | 0.0  | 1.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 19.5 | 0.0  | 9.5  | 0.0  | 21.8 | 0.0  | 12.4 |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 1.0  | 0.0  | 0.3  | 0.0  | 2.9  | 0.0  | 3.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.3  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 1.1  | 0.0  | 0.3  | 0.0  | 2.9  | 0.0  | 3.3  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.27 | 0.00 | 0.16 | 0.00 | 0.37 | 0.00 | 0.01 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 19.8 |
| HCM 7th LOS                  | B    |

# HCM 7th Signalized Intersection Capacity Analysis

## 8: 12th Ave & Hume Ave

PM 2024  
07/16/2024

|                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|---|---|
|                               |  |  |  |  |  |  |      |   |   |
| Movement                      | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |      |   |   |
| Lane Configurations           |  |  |  |                                                                                   |  |  |      |   |   |
| Traffic Volume (veh/h)        | 9                                                                                 | 139                                                                               | 146                                                                               | 18                                                                                | 180                                                                               | 155                                                                               |      |   |   |
| Future Volume (veh/h)         | 9                                                                                 | 139                                                                               | 146                                                                               | 18                                                                                | 180                                                                               | 155                                                                               |      |   |   |
| Number                        | 3                                                                                 | 18                                                                                | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 |      |   |   |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |      |   |   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |      |   |   |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |
| Work Zone On Approach         | No                                                                                |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |      |   |   |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              |      |   |   |
| Adj Flow Rate, veh/h          | 10                                                                                | 151                                                                               | 159                                                                               | 20                                                                                | 196                                                                               | 168                                                                               |      |   |   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |      |   |   |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |      |   |   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |      |   |   |
| Cap, veh/h                    | 207                                                                               | 184                                                                               | 1278                                                                              | 161                                                                               | 925                                                                               | 1468                                                                              |      |   |   |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.67                                                                              | 1.67                                                                              |      |   |   |
| Prop Arrive On Green          | 0.13                                                                              | 0.13                                                                              | 0.78                                                                              | 0.78                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |
| Ln Grp Delay, s/veh           | 34.7                                                                              | 47.0                                                                              | 0.0                                                                               | 2.5                                                                               | 0.6                                                                               | 0.2                                                                               |      |   |   |
| Ln Grp LOS                    | C                                                                                 | D                                                                                 |                                                                                   | A                                                                                 | A                                                                                 | A                                                                                 |      |   |   |
| Approach Vol, veh/h           | 161                                                                               |                                                                                   | 179                                                                               |                                                                                   |                                                                                   | 364                                                                               |      |   |   |
| Approach Delay, s/veh         | 46.2                                                                              |                                                                                   | 2.5                                                                               |                                                                                   |                                                                                   | 0.4                                                                               |      |   |   |
| Approach LOS                  | D                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |      |   |   |
| Timer:                        |                                                                                   | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6    | 7 | 8 |
| Assigned Phs                  |                                                                                   |                                                                                   | 2                                                                                 | 8                                                                                 |                                                                                   |                                                                                   | 6    |   |   |
| Case No                       |                                                                                   |                                                                                   | 8.0                                                                               | 9.0                                                                               |                                                                                   |                                                                                   | 6.0  |   |   |
| Phs Duration (G+Y+Rc), s      |                                                                                   |                                                                                   | 74.6                                                                              | 15.4                                                                              |                                                                                   |                                                                                   | 74.6 |   |   |
| Change Period (Y+Rc), s       |                                                                                   |                                                                                   | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                   | 4.0  |   |   |
| Max Green (Gmax), s           |                                                                                   |                                                                                   | 53.0                                                                              | 29.0                                                                              |                                                                                   |                                                                                   | 53.0 |   |   |
| Max Allow Headway (MAH), s    |                                                                                   |                                                                                   | 4.0                                                                               | 4.3                                                                               |                                                                                   |                                                                                   | 4.4  |   |   |
| Max Q Clear (g_c+I1), s       |                                                                                   |                                                                                   | 4.1                                                                               | 11.1                                                                              |                                                                                   |                                                                                   | 4.7  |   |   |
| Green Ext Time (g_e), s       |                                                                                   |                                                                                   | 0.6                                                                               | 0.5                                                                               |                                                                                   |                                                                                   | 1.5  |   |   |
| Prob of Phs Call (p_c)        |                                                                                   |                                                                                   | 1.00                                                                              | 0.98                                                                              |                                                                                   |                                                                                   | 1.00 |   |   |
| Prob of Max Out (p_x)         |                                                                                   |                                                                                   | 0.00                                                                              | 0.00                                                                              |                                                                                   |                                                                                   | 0.00 |   |   |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 5                                                                                 | 3                                                                                 |                                                                                   |                                                                                   | 1    |   |   |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 0                                                                                 | 1641                                                                              |                                                                                   |                                                                                   | 1110 |   |   |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 2                                                                                 | 8                                                                                 |                                                                                   |                                                                                   | 6    |   |   |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 1629                                                                              | 0                                                                                 |                                                                                   |                                                                                   | 1870 |   |   |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 12                                                                                | 18                                                                                |                                                                                   |                                                                                   | 16   |   |   |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 205                                                                               | 1460                                                                              |                                                                                   |                                                                                   | 0    |   |   |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |
| Assigned Mvmt                 |                                                                                   | 0                                                                                 | 5                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 1    | 0 | 0 |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 8: 12th Ave & Hume Ave

PM 2024  
07/16/2024

|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     | L    |      |      |      |      | L    |      |      |
| Lanes in Grp                        | 0    | 0    | 1    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 10   | 0    | 0    | 196  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 1641 | 0    | 0    | 1110 | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.5  | 0.0  | 0.0  | 0.6  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.5  | 0.0  | 0.0  | 2.7  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 1641 | 0    | 0    | 1110 | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 70.6 | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 68.5 | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.6  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 70.6 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 207  | 0    | 0    | 925  | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 | 0.21 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 529  | 0    | 0    | 925  | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.98 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 34.6 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  | 0.5  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 34.7 | 0.0  | 0.0  | 0.6  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 8    | 0    | 0    | 6    | 0    | 0    |
| Lane Assignment             | T    |      |      |      |      |      |      |      |
| Lanes in Grp                | 0    | 0    | 0    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 0    | 0    | 0    | 0    | 168  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 0    | 0    | 0    | 0    | 1870 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 0    | 0    | 0    | 0    | 1468 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.11 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 0    | 0    | 0    | 0    | 1468 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.98 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 8: 12th Ave & Hume Ave

PM 2024  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 18   | 0    | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      |      |      |      |      |
| Lanes in Grp                     | 0    | 1    | 1    | 0    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 179  | 151  | 0    | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1833 | 1460 | 0    | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 2.1  | 9.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 2.1  | 9.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.11 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1439 | 184  | 0    | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.12 | 0.82 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1439 | 470  | 0    | 0    | 0    | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 2.3  | 38.3 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.2  | 8.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 2.5  | 47.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.3  | 3.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.1  | 0.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.3  | 3.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.01 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 11.4 |
| HCM 7th LOS                  | B    |



# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

PM 2024+Project  
07/16/2024

| Movement                      | EBL | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|-------------------------------|-----|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations           |     |      |      | ↰↱   |      | ↰↱   | ↰    | ↱↱   |      |      | ↱↱↱  | ↰    |
| Traffic Volume (veh/h)        | 0   | 0    | 0    | 179  | 0    | 453  | 30   | 1012 | 0    | 0    | 1215 | 563  |
| Future Volume (veh/h)         | 0   | 0    | 0    | 179  | 0    | 453  | 30   | 1012 | 0    | 0    | 1215 | 563  |
| Number                        |     |      |      | 3    | 8    | 18   | 5    | 2    | 12   | 1    | 6    | 16   |
| Initial Q, veh                |     |      |      | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Lane Width Adj.               |     |      |      | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped-Bike Adj (A_pbT)          |     |      |      | 1.00 |      | 1.00 | 1.00 |      | 1.00 | 1.00 |      | 1.00 |
| Parking Bus Adj               |     |      |      | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach         |     |      |      | No   |      |      |      | No   |      |      |      | No   |
| Lanes Open During Work Zone   |     |      |      |      |      |      |      |      |      |      |      |      |
| Adj Sat Flow, veh/h/ln        |     |      |      | 1723 | 0    | 1723 | 1723 | 1870 | 0    | 0    | 1870 | 1723 |
| Adj Flow Rate, veh/h          |     |      |      | 195  | 0    | 492  | 33   | 1100 | 0    | 0    | 1321 | 612  |
| Peak Hour Factor              |     |      |      | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, %          |     |      |      | 2    | 0    | 2    | 2    | 2    | 0    | 0    | 2    | 2    |
| Opposing Right Turn Influence |     |      |      | Yes  |      |      | Yes  |      |      | No   |      |      |
| Cap, veh/h                    |     |      |      | 716  | 0    | 578  | 41   | 2443 | 0    | 0    | 3156 | 902  |
| HCM Platoon Ratio             |     |      |      | 1.00 | 1.00 | 1.00 | 0.33 | 0.33 | 1.00 | 1.00 | 1.00 | 1.00 |
| Prop Arrive On Green          |     |      |      | 0.22 | 0.00 | 0.22 | 0.01 | 0.23 | 0.00 | 0.00 | 0.62 | 0.62 |
| Unsig. Movement Delay         |     |      |      |      |      |      |      |      |      |      |      |      |
| Ln Grp Delay, s/veh           |     |      |      | 29.0 | 0.0  | 42.2 | 71.0 | 20.7 | 0.0  | 0.0  | 9.3  | 15.4 |
| Ln Grp LOS                    |     |      |      | C    |      | D    | E    | C    |      |      | A    | B    |
| Approach Vol, veh/h           |     |      |      | 687  |      |      |      | 1133 |      |      |      | 1933 |
| Approach Delay, s/veh         |     |      |      | 38.5 |      |      |      | 22.1 |      |      |      | 11.2 |
| Approach LOS                  |     |      |      | D    |      |      |      | C    |      |      |      | B    |
| Timer:                        | 1   | 2    | 3    | 4    | 5    | 6    | 7    | 8    |      |      |      |      |
| Assigned Phs                  |     | 2    | 8    |      | 5    | 6    |      |      |      |      |      |      |
| Case No                       |     | 4.0  | 9.0  |      | 2.0  | 7.0  |      |      |      |      |      |      |
| Phs Duration (G+Y+Rc), s      |     | 65.9 | 24.1 |      | 6.2  | 59.6 |      |      |      |      |      |      |
| Change Period (Y+Rc), s       |     | 5.5  | 4.0  |      | 4.0  | 5.5  |      |      |      |      |      |      |
| Max Green (Gmax), s           |     | 56.5 | 24.0 |      | 6.0  | 46.5 |      |      |      |      |      |      |
| Max Allow Headway (MAH), s    |     | 4.0  | 4.3  |      | 4.1  | 4.1  |      |      |      |      |      |      |
| Max Q Clear (g_c+I1), s       |     | 26.0 | 18.5 |      | 3.8  | 26.8 |      |      |      |      |      |      |
| Green Ext Time (g_e), s       |     | 5.5  | 1.6  |      | 0.0  | 9.5  |      |      |      |      |      |      |
| Prob of Phs Call (p_c)        |     | 1.00 | 1.00 |      | 0.56 | 1.00 |      |      |      |      |      |      |
| Prob of Max Out (p_x)         |     | 0.01 | 0.69 |      | 1.00 | 0.33 |      |      |      |      |      |      |
| Left-Turn Movement Data       |     |      |      |      |      |      |      |      |      |      |      |      |
| Assigned Mvmt                 |     |      |      | 3    |      | 5    | 1    |      |      |      |      |      |
| Mvmt Sat Flow, veh/h          |     |      |      | 3183 |      | 1641 | 0    |      |      |      |      |      |
| Through Movement Data         |     |      |      |      |      |      |      |      |      |      |      |      |
| Assigned Mvmt                 |     | 2    | 8    |      |      | 6    |      |      |      |      |      |      |
| Mvmt Sat Flow, veh/h          |     | 3647 | 0    |      |      | 5274 |      |      |      |      |      |      |
| Right-Turn Movement Data      |     |      |      |      |      |      |      |      |      |      |      |      |
| Assigned Mvmt                 |     | 12   | 18   |      |      | 16   |      |      |      |      |      |      |
| Mvmt Sat Flow, veh/h          |     | 0    | 2569 |      |      | 1460 |      |      |      |      |      |      |
| Left Lane Group Data          |     |      |      |      |      |      |      |      |      |      |      |      |
| Assigned Mvmt                 | 0   | 0    | 3    | 0    | 5    | 1    | 0    | 0    |      |      |      |      |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

PM 2024+Project  
07/16/2024

|                                     |      |      |      |          |      |      |      |      |
|-------------------------------------|------|------|------|----------|------|------|------|------|
| Lane Assignment                     | L    |      |      | L (Prot) |      |      |      |      |
| Lanes in Grp                        | 0    | 0    | 2    | 0        | 1    | 0    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 195  | 0        | 33   | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 1591 | 0        | 1641 | 0    | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 4.6  | 0.0      | 1.8  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 4.6  | 0.0      | 1.8  | 0.0  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 1591 | 0        | 0    | 0    | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0        | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 55.6 | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 1.00 | 0.00     | 1.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 716  | 0        | 41   | 0    | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.27 | 0.00     | 0.81 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 852  | 0        | 109  | 0    | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 1.00 | 0.00     | 0.88 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 28.8 | 0.0      | 44.4 | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.2  | 0.0      | 26.6 | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 29.0 | 0.0      | 71.0 | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 1.6  | 0.0      | 0.7  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0      | 0.3  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 0.00 | 1.00 | 0.00     | 1.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 1.6  | 0.0      | 1.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.15 | 0.00     | 0.06 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0        | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 8    | 0    | 0    | 6    | 0    | 0    |
| Lane Assignment             | T    |      |      | T    |      |      |      |      |
| Lanes in Grp                | 0    | 2    | 0    | 0    | 0    | 3    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 1100 | 0    | 0    | 0    | 1321 | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1777 | 0    | 0    | 0    | 1702 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 24.0 | 0.0  | 0.0  | 0.0  | 12.0 | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 24.0 | 0.0  | 0.0  | 0.0  | 12.0 | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 2443 | 0    | 0    | 0    | 3156 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.45 | 0.00 | 0.00 | 0.00 | 0.42 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 2443 | 0    | 0    | 0    | 3156 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.88 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 20.1 | 0.0  | 0.0  | 0.0  | 8.9  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.5  | 0.0  | 0.0  | 0.0  | 0.4  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 20.7 | 0.0  | 0.0  | 0.0  | 9.3  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 11.1 | 0.0  | 0.0  | 0.0  | 3.3  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 11.2 | 0.0  | 0.0  | 0.0  | 3.4  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.51 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 18   | 0    | 0    | 16   | 0    | 0    |
| Lane Assignment                  | R    |      | R    |      |      |      |      |      |
| Lanes in Grp                     | 0    | 0    | 2    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 0    | 492  | 0    | 0    | 612  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 0    | 1285 | 0    | 0    | 1460 | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 0.0  | 16.5 | 0.0  | 0.0  | 24.8 | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 0.0  | 16.5 | 0.0  | 0.0  | 24.8 | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 0    | 578  | 0    | 0    | 902  | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.00 | 0.85 | 0.00 | 0.00 | 0.68 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 0    | 688  | 0    | 0    | 902  | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 0.0  | 33.4 | 0.0  | 0.0  | 11.3 | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.0  | 8.8  | 0.0  | 0.0  | 4.1  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 0.0  | 42.2 | 0.0  | 0.0  | 15.4 | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.0  | 4.7  | 0.0  | 0.0  | 5.8  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.0  | 0.7  | 0.0  | 0.0  | 1.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.0  | 5.4  | 0.0  | 0.0  | 6.9  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.00 | 0.33 | 0.00 | 0.00 | 1.40 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 19.5 |
| HCM 7th LOS                  | B    |



# HCM 7th Signalized Intersection Capacity Analysis

## 2: 12th Ave & SR 198 WB EB Ramps

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|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |  |                                                                                     |                                                                                     |  |  |
| Traffic Volume (veh/h)        | 437                                                                               | 0                                                                                 | 34                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 605                                                                                 | 129                                                                                 | 0                                                                                   | 881                                                                                 | 0                                                                                   |
| Future Volume (veh/h)         | 437                                                                               | 0                                                                                 | 34                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 605                                                                                 | 129                                                                                 | 0                                                                                   | 881                                                                                 | 0                                                                                   |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                |                                                                                   |                                                                                   |                                                                                   | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 0                                                                                 | 1723                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1870                                                                                | 1723                                                                                | 0                                                                                   | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 475                                                                               | 0                                                                                 | 37                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 658                                                                                 | 140                                                                                 | 0                                                                                   | 958                                                                                 | 0                                                                                   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 0                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Cap, veh/h                    | 596                                                                               | 0                                                                                 | 273                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2114                                                                                | 449                                                                                 | 0                                                                                   | 2577                                                                                | 1059                                                                                |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 2.00                                                                                | 2.00                                                                                | 1.00                                                                                | 2.00                                                                                | 2.00                                                                                |
| Prop Arrive On Green          | 0.19                                                                              | 0.00                                                                              | 0.19                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 37.5                                                                              | 0.0                                                                               | 30.7                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 0.6                                                                                 | 0.6                                                                                 | 0.0                                                                                 | 0.4                                                                                 | 0.0                                                                                 |
| Ln Grp LOS                    | D                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     | A                                                                                   | A                                                                                   |                                                                                     | A                                                                                   |                                                                                     |
| Approach Vol, veh/h           | 512                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 798                                                                                 |                                                                                     |                                                                                     | 958                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh         | 37.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.6                                                                                 |                                                                                     |                                                                                     | 0.4                                                                                 |                                                                                     |                                                                                     |
| Approach LOS                  | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Timer:                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                               | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       | 8.0                                                                               |                                                                                   | 9.0                                                                               |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 69.3                                                                              |                                                                                   | 20.7                                                                              |                                                                                   | 69.3                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | 5.5                                                                               |                                                                                   | 4.0                                                                               |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           | 50.5                                                                              |                                                                                   | 30.0                                                                              |                                                                                   | 50.5                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    | 4.1                                                                               |                                                                                   | 4.1                                                                               |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       | 2.0                                                                               |                                                                                   | 14.8                                                                              |                                                                                   | 2.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       | 3.1                                                                               |                                                                                   | 1.9                                                                               |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         | 0.00                                                                              |                                                                                   | 0.01                                                                              |                                                                                   | 0.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 5                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 1                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 0                                                                                 |                                                                                   | 3183                                                                              |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 3009                                                                              |                                                                                   | 0                                                                                 |                                                                                   | 3647                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 12                                                                                |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 620                                                                               |                                                                                   | 1460                                                                              |                                                                                   | 1460                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 2: 12th Ave & SR 198 WB EB Ramps

PM 2024+Project  
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|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     | L    |      |      |      |      |      |      |      |
| Lanes in Grp                        | 0    | 0    | 0    | 2    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 0    | 475  | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 0    | 1591 | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.0  | 12.8 | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.0  | 12.8 | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 0    | 1591 | 0    | 0    | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 65.3 | 0.0  | 0.0  | 0.0  | 65.3 | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 0    | 596  | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.00 | 0.80 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 0    | 1065 | 0    | 0    | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 0.0  | 34.9 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.0  | 2.5  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 0.0  | 37.5 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.0  | 4.6  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.0  | 4.8  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.00 | 0.24 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 0    |
| Lane Assignment             | T    |      |      |      | T    |      |      |      |
| Lanes in Grp                | 0    | 1    | 0    | 0    | 0    | 2    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 401  | 0    | 0    | 0    | 958  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1777 | 0    | 0    | 0    | 1777 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 1288 | 0    | 0    | 0    | 2577 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.31 | 0.00 | 0.00 | 0.00 | 0.37 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 1288 | 0    | 0    | 0    | 2577 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.89 | 0.00 | 0.00 | 0.00 | 0.93 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.6  | 0.0  | 0.0  | 0.0  | 0.4  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.6  | 0.0  | 0.0  | 0.0  | 0.4  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

## HCM 7th Signalized Intersection Capacity Analysis

### 2: 12th Ave & SR 198 WB EB Ramps

PM 2024+Project  
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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

#### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      | R    |      |      |      |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 397  | 0    | 37   | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1759 | 0    | 1460 | 0    | 1460 | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 0.0  | 0.0  | 1.9  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 0.0  | 0.0  | 1.9  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.35 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1275 | 0    | 273  | 0    | 1059 | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.31 | 0.00 | 0.14 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1275 | 0    | 488  | 0    | 1059 | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 0.89 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 0.0  | 0.0  | 30.5 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.6  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 0.6  | 0.0  | 30.7 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.0  | 0.0  | 0.6  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.2  | 0.0  | 0.6  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

#### Intersection Summary

|                              |     |
|------------------------------|-----|
| HCM 7th Control Delay, s/veh | 8.7 |
| HCM 7th LOS                  | A   |

| Intersection                |         |        |         |        |         |         |        |
|-----------------------------|---------|--------|---------|--------|---------|---------|--------|
| Intersection Delay, s/veh   | 3.5     |        |         |        |         |         |        |
| Intersection LOS            | A       |        |         |        |         |         |        |
| Approach                    | EB      |        | WB      |        | NB      |         | SB     |
| Entry Lanes                 | 1       |        | 1       |        | 1       |         | 1      |
| Conflicting Circle Lanes    | 1       |        | 1       |        | 1       |         | 1      |
| Adj Approach Flow, veh/h    | 539     |        | 411     |        | 0       |         | 264    |
| Demand Flow Rate, veh/h     | 550     |        | 419     |        | 0       |         | 269    |
| Vehicles Circulating, veh/h | 440     |        | 88      |        | 256     |         | 281    |
| Vehicles Exiting, veh/h     | 105     |        | 168     |        | 397     |         | 88     |
| Ped Vol Crossing Leg, #/h   | 0       |        | 0       |        | 0       |         | 0      |
| Ped Cap Adj                 | 1.000   |        | 1.000   |        | 1.000   |         | 1.000  |
| Approach Delay, s/veh       | 2.6     |        | 3.3     |        | 0.0     |         | 5.9    |
| Approach LOS                | A       |        | A       |        | -       |         | A      |
| Lane                        | Left    | Bypass | Left    | Bypass | Left    | Left    | Bypass |
| Designated Moves            | LT      | R      | LT      | R      | LTR     | LT      | R      |
| Assumed Moves               | LT      |        | LT      |        | LTR     | LT      |        |
| RT Channelized              |         | Free   |         | Free   |         |         | Free   |
| Lane Util                   | 1.000   |        | 1.000   |        | 1.000   | 1.000   |        |
| Follow-Up Headway, s        | 2.609   |        | 2.609   |        | 2.609   | 2.609   |        |
| Critical Headway, s         | 4.976   |        | 4.976   |        | 4.976   | 4.976   |        |
| A (Intercept)               | 1380    |        | 1380    |        | 1380    | 1380    |        |
| B (Slope)                   | 1.02e-3 |        | 1.02e-3 |        | 1.02e-3 | 1.02e-3 |        |
| Entry Flow, veh/h           | 213     | 337    | 281     | 138    | 0       | 264     | 5      |
| Cap Entry Lane, veh/h       | 881     | 1938   | 1261    | 1938   | 1063    | 1036    | 1938   |
| Entry HV Adj Factor         | 0.979   | 0.980  | 0.982   | 0.980  | 1.000   | 0.980   | 0.980  |
| Flow Entry, veh/h           | 209     | 330    | 276     | 135    | 0       | 259     | 5      |
| Cap Entry, veh/h            | 863     | 1900   | 1239    | 1900   | 1063    | 1015    | 1900   |
| V/C Ratio                   | 0.242   | 0.174  | 0.223   | 0.071  | 0.000   | 0.255   | 0.003  |
| Control Delay, s/veh        | 6.7     | 0.0    | 4.9     | 0.0    | 3.4     | 6.0     | 0.0    |
| LOS                         | A       | A      | A       | A      | A       | A       | A      |
| 95th %tile Queue, veh       | 1       | 1      | 1       | 0      | 0       | 1       | 0      |

# HCM 7th Signalized Intersection Capacity Analysis

## 4: SR 198 EB Ramps & Hanford Armona Rd

PM 2024+Project  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)        | 224                                                                               | 11                                                                                | 145                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 262                                                                                 | 65                                                                                  | 145                                                                                 | 196                                                                                 | 0                                                                                   |
| Future Volume (veh/h)         | 224                                                                               | 11                                                                                | 145                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 262                                                                                 | 65                                                                                  | 145                                                                                 | 196                                                                                 | 0                                                                                   |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                |                                                                                   |                                                                                   |                                                                                   | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 0                                                                                   |
| Adj Flow Rate, veh/h          | 243                                                                               | 12                                                                                | 158                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 285                                                                                 | 71                                                                                  | 158                                                                                 | 213                                                                                 | 0                                                                                   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |                                                                                     | Yes                                                                                 |
| Cap, veh/h                    | 295                                                                               | 0                                                                                 | 262                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1057                                                                                | 263                                                                                 | 449                                                                                 | 585                                                                                 | 0                                                                                   |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Prop Arrive On Green          | 0.18                                                                              | 0.18                                                                              | 0.18                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 0.73                                                                                | 0.71                                                                                | 0.73                                                                                | 0.73                                                                                | 0.00                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 41.4                                                                              | 0.0                                                                               | 36.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 4.6                                                                                 | 5.9                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Ln Grp LOS                    | D                                                                                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     | A                                                                                   | A                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h           | 401                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 356                                                                                 |                                                                                     |                                                                                     | 371                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh         | 39.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 4.6                                                                                 |                                                                                     |                                                                                     | 5.9                                                                                 |                                                                                     |                                                                                     |
| Approach LOS                  | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Timer:                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       | 8.0                                                                               |                                                                                   | 9.0                                                                               |                                                                                   | 8.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 69.8                                                                              |                                                                                   | 20.2                                                                              |                                                                                   | 69.8                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | 5.5                                                                               |                                                                                   | 4.1                                                                               |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           | 52.5                                                                              |                                                                                   | 27.9                                                                              |                                                                                   | 52.5                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    | 4.1                                                                               |                                                                                   | 4.2                                                                               |                                                                                   | 4.4                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       | 8.0                                                                               |                                                                                   | 14.8                                                                              |                                                                                   | 14.1                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       | 1.3                                                                               |                                                                                   | 1.2                                                                               |                                                                                   | 1.7                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         | 0.00                                                                              |                                                                                   | 0.02                                                                              |                                                                                   | 0.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 5                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 1                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 0                                                                                 |                                                                                   | 1641                                                                              |                                                                                   | 536                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 1445                                                                              |                                                                                   | 0                                                                                 |                                                                                   | 799                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 12                                                                                |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 360                                                                               |                                                                                   | 1460                                                                              |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 4: SR 198 EB Ramps & Hanford Armona Rd

PM 2024+Project  
07/16/2024

|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     |      |      |      | L    |      | L+T  |      |      |
| Lanes in Grp                        | 0    | 0    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 0    | 243  | 0    | 371  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 0    | 1641 | 0    | 1335 | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.0  | 12.8 | 0.0  | 6.1  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.0  | 12.8 | 0.0  | 12.1 | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 0    | 1641 | 0    | 1042 | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 65.8 | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 59.8 | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 6.1  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 65.8 | 0.0  | 0.0  | 0.0  | 2.7  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 2.7  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.43 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 0    | 295  | 0    | 1034 | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.00 | 0.82 | 0.00 | 0.36 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 0    | 510  | 0    | 1034 | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 0.0  | 35.6 | 0.0  | 4.9  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.0  | 5.8  | 0.0  | 1.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 0.0  | 41.4 | 0.0  | 5.9  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.0  | 4.7  | 0.0  | 1.2  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.5  | 0.0  | 0.3  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.0  | 5.2  | 0.0  | 1.5  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.00 | 0.37 | 0.00 | 0.31 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 0    |
| Lane Assignment             |      |      |      |      |      |      |      |      |
| Lanes in Grp                | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 4: SR 198 EB Ramps & Hanford Armona Rd

PM 2024+Project  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      |      |      |      |      |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 356  | 0    | 158  | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1806 | 0    | 1460 | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 6.0  | 0.0  | 9.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 6.0  | 0.0  | 9.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.20 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1321 | 0    | 262  | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.27 | 0.00 | 0.60 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1321 | 0    | 454  | 0    | 0    | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 4.1  | 0.0  | 34.0 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.5  | 0.0  | 2.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 4.6  | 0.0  | 36.2 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 1.2  | 0.0  | 2.9  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.2  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 1.4  | 0.0  | 3.1  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.13 | 0.00 | 0.22 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 17.4 |
| HCM 7th LOS                  | B    |

| Intersection              |        |      |      |        |       |      |        |       |       |        |       |       |
|---------------------------|--------|------|------|--------|-------|------|--------|-------|-------|--------|-------|-------|
| Int Delay, s/veh          | 3.5    |      |      |        |       |      |        |       |       |        |       |       |
| Movement                  | EBL    | EBT  | EBR  | WBL    | WBT   | WBR  | NBL    | NBT   | NBR   | SBL    | SBT   | SBR   |
| Lane Configurations       |        | ↕    |      |        | ↕     |      |        | ↕     |       |        | ↕     |       |
| Traffic Vol, veh/h        | 0      | 299  | 83   | 33     | 227   | 0    | 93     | 0     | 36    | 0      | 0     | 0     |
| Future Vol, veh/h         | 0      | 299  | 83   | 33     | 227   | 0    | 93     | 0     | 36    | 0      | 0     | 0     |
| Conflicting Peds, #/hr    | 0      | 0    | 0    | 0      | 0     | 0    | 0      | 0     | 0     | 0      | 0     | 0     |
| Sign Control              | Free   | Free | Free | Free   | Free  | Free | Stop   | Stop  | Stop  | Stop   | Stop  | Stop  |
| RT Channelized            | -      | -    | None | -      | -     | None | -      | -     | None  | -      | -     | None  |
| Storage Length            | -      | -    | -    | -      | -     | -    | -      | -     | -     | -      | -     | -     |
| Veh in Median Storage, #  | -      | 0    | -    | -      | 0     | -    | -      | 0     | -     | -      | 0     | -     |
| Grade, %                  | -      | 0    | -    | -      | 0     | -    | -      | 0     | -     | -      | 0     | -     |
| Peak Hour Factor          | 92     | 92   | 92   | 92     | 92    | 92   | 92     | 92    | 92    | 92     | 92    | 92    |
| Heavy Vehicles, %         | 2      | 2    | 2    | 2      | 2     | 2    | 2      | 2     | 2     | 2      | 2     | 2     |
| Mvmt Flow                 | 0      | 325  | 90   | 36     | 247   | 0    | 101    | 0     | 39    | 0      | 0     | 0     |
| Major/Minor               | Major1 |      |      | Major2 |       |      | Minor1 |       |       | Minor2 |       |       |
| Conflicting Flow All      | 247    | 0    | 0    | 415    | 0     | 0    | 689    | 689   | 370   | 643    | 734   | 247   |
| Stage 1                   | -      | -    | -    | -      | -     | -    | 370    | 370   | -     | 318    | 318   | -     |
| Stage 2                   | -      | -    | -    | -      | -     | -    | 318    | 318   | -     | 325    | 415   | -     |
| Critical Hdwy             | 4.12   | -    | -    | 4.12   | -     | -    | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1       | -      | -    | -    | -      | -     | -    | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2       | -      | -    | -    | -      | -     | -    | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy            | 2.218  | -    | -    | 2.218  | -     | -    | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver        | 1319   | -    | -    | 1144   | -     | -    | 360    | 369   | 676   | 386    | 347   | 792   |
| Stage 1                   | -      | -    | -    | -      | -     | -    | 650    | 620   | -     | 693    | 653   | -     |
| Stage 2                   | -      | -    | -    | -      | -     | -    | 693    | 653   | -     | 687    | 592   | -     |
| Platoon blocked, %        | -      | -    | -    | -      | -     | -    | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver        | 1319   | -    | -    | 1144   | -     | -    | 347    | 356   | 676   | 351    | 335   | 792   |
| Mov Cap-2 Maneuver        | -      | -    | -    | -      | -     | -    | 347    | 356   | -     | 351    | 335   | -     |
| Stage 1                   | -      | -    | -    | -      | -     | -    | 650    | 620   | -     | 668    | 630   | -     |
| Stage 2                   | -      | -    | -    | -      | -     | -    | 668    | 630   | -     | 648    | 592   | -     |
| Approach                  | EB     |      |      | WB     |       |      | NB     |       |       | SB     |       |       |
| HCM Control Delay, s/v    | 0      |      |      | 1.05   |       |      | 18.7   |       |       | 0      |       |       |
| HCM LOS                   |        |      |      |        |       |      | C      |       |       | A      |       |       |
| Minor Lane/Major Mvmt     | NBLn1  | EBL  | EBT  | EBR    | WBL   | WBT  | WBR    | SBLn1 |       |        |       |       |
| Capacity (veh/h)          | 402    | 1319 | -    | -      | 228   | -    | -      | -     |       |        |       |       |
| HCM Lane V/C Ratio        | 0.349  | -    | -    | -      | 0.031 | -    | -      | -     |       |        |       |       |
| HCM Control Delay (s/veh) | 18.7   | 0    | -    | -      | 8.2   | 0    | -      | 0     |       |        |       |       |
| HCM Lane LOS              | C      | A    | -    | -      | A     | A    | -      | A     |       |        |       |       |
| HCM 95th %tile Q(veh)     | 1.5    | 0    | -    | -      | 0.1   | -    | -      | -     |       |        |       |       |



# HCM 7th Signalized Intersection Capacity Analysis

## 6: 12th Ave & Hanford Armona Rd

PM 2024+Project  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |  |  |  |  |  |   |  |  |  |  |  |
| Traffic Volume (veh/h)        | 136                                                                               | 239                                                                               | 55                                                                                | 36                                                                                | 230                                                                               | 247                                                                               | 59                                                                                  | 308                                                                                 | 37                                                                                  | 328                                                                                 | 338                                                                                 | 173                                                                                 |
| Future Volume (veh/h)         | 136                                                                               | 239                                                                               | 55                                                                                | 36                                                                                | 230                                                                               | 247                                                                               | 59                                                                                  | 308                                                                                 | 37                                                                                  | 328                                                                                 | 338                                                                                 | 173                                                                                 |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                                | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 148                                                                               | 260                                                                               | 60                                                                                | 39                                                                                | 250                                                                               | 268                                                                               | 64                                                                                  | 335                                                                                 | 40                                                                                  | 357                                                                                 | 367                                                                                 | 188                                                                                 |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Cap, veh/h                    | 153                                                                               | 337                                                                               | 263                                                                               | 225                                                                               | 419                                                                               | 327                                                                               | 177                                                                                 | 1757                                                                                | 208                                                                                 | 448                                                                                 | 907                                                                                 | 457                                                                                 |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                                | 2.00                                                                                | 2.00                                                                                | 1.67                                                                                | 1.67                                                                                | 1.67                                                                                |
| Prop Arrive On Green          | 0.09                                                                              | 0.18                                                                              | 0.18                                                                              | 0.14                                                                              | 0.22                                                                              | 0.22                                                                              | 0.22                                                                                | 1.00                                                                                | 1.00                                                                                | 0.66                                                                                | 0.66                                                                                | 0.63                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 103.1                                                                             | 38.9                                                                              | 32.0                                                                              | 34.6                                                                              | 32.5                                                                              | 43.3                                                                              | 33.8                                                                                | 0.4                                                                                 | 0.4                                                                                 | 27.5                                                                                | 11.9                                                                                | 12.7                                                                                |
| Ln Grp LOS                    | F                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | C                                                                                   | A                                                                                   | A                                                                                   | C                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h           |                                                                                   | 468                                                                               |                                                                                   |                                                                                   | 557                                                                               |                                                                                   |                                                                                     | 439                                                                                 |                                                                                     |                                                                                     | 912                                                                                 |                                                                                     |
| Approach Delay, s/veh         |                                                                                   | 58.3                                                                              |                                                                                   |                                                                                   | 37.9                                                                              |                                                                                   |                                                                                     | 5.3                                                                                 |                                                                                     |                                                                                     | 18.2                                                                                |                                                                                     |
| Approach LOS                  |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | A                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer:                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  |                                                                                   | 2                                                                                 | 4                                                                                 | 3                                                                                 | 6                                                                                 | 5                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       |                                                                                   | 4.0                                                                               | 3.0                                                                               | 2.0                                                                               | 6.4                                                                               | 2.0                                                                               | 2.0                                                                                 | 3.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      |                                                                                   | 53.4                                                                              | 20.2                                                                              | 16.4                                                                              | 39.7                                                                              | 13.7                                                                              | 12.4                                                                                | 24.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       |                                                                                   | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                                 | 5.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           |                                                                                   | 43.7                                                                              | 24.6                                                                              | 5.2                                                                               | 34.2                                                                              | 4.0                                                                               | 6.9                                                                                 | 22.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    |                                                                                   | 4.0                                                                               | 4.1                                                                               | 4.1                                                                               | 4.6                                                                               | 4.1                                                                               | 4.1                                                                                 | 4.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       |                                                                                   | 2.0                                                                               | 13.9                                                                              | 3.9                                                                               | 34.7                                                                              | 5.0                                                                               | 10.1                                                                                | 17.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       |                                                                                   | 1.3                                                                               | 0.8                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 1.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        |                                                                                   | 1.00                                                                              | 1.00                                                                              | 0.62                                                                              | 1.00                                                                              | 0.80                                                                              | 0.98                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         |                                                                                   | 0.00                                                                              | 0.03                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.68                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   |                                                                                   |                                                                                   | 3                                                                                 | 1                                                                                 | 5                                                                                 | 7                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   |                                                                                   | 1641                                                                              | 928                                                                               | 1641                                                                              | 1641                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 2                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 3200                                                                              | 1870                                                                              |                                                                                   | 2287                                                                              |                                                                                   | 1870                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 12                                                                                | 14                                                                                |                                                                                   | 16                                                                                |                                                                                   | 18                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 379                                                                               | 1460                                                                              |                                                                                   | 1153                                                                              |                                                                                   | 1460                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 3                                                                                 | 1                                                                                 | 5                                                                                 | 7                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 6: 12th Ave & Hanford Armona Rd

PM 2024+Project  
07/16/2024

| Lane Assignment                     | L (Prot) |      |      | L    | L (Prot) | L (Prot) | L (Prot) |      |
|-------------------------------------|----------|------|------|------|----------|----------|----------|------|
| Lanes in Grp                        | 0        | 0    | 0    | 1    | 1        | 1        | 1        | 0    |
| Grp Vol (v), veh/h                  | 0        | 0    | 0    | 39   | 357      | 64       | 148      | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0        | 0    | 0    | 1641 | 928      | 1641     | 1641     | 0    |
| Q Serve Time (g_s), s               | 0.0      | 0.0  | 0.0  | 1.9  | 32.7     | 3.0      | 8.1      | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0      | 0.0  | 0.0  | 1.9  | 32.7     | 3.0      | 8.1      | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0        | 0    | 0    | 0    | 928      | 0        | 0        | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0        | 0    | 0    | 0    | 0        | 0        | 0        | 0    |
| Perm LT Eff Green (g_p), s          | 0.0      | 0.0  | 0.0  | 0.0  | 35.7     | 0.0      | 0.0      | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0      | 0.0  | 0.0  | 0.0  | 35.7     | 0.0      | 0.0      | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0      | 0.0  | 0.0  | 0.0  | 32.7     | 0.0      | 0.0      | 0.0  |
| Time to First Blk (g_f), s          | 0.0      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0      | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0      | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00     | 0.00 | 0.00 | 1.00 | 1.00     | 1.00     | 1.00     | 0.00 |
| Lane Grp Cap (c), veh/h             | 0        | 0    | 0    | 225  | 448      | 177      | 153      | 0    |
| V/C Ratio (X)                       | 0.00     | 0.00 | 0.00 | 0.17 | 0.80     | 0.36     | 0.97     | 0.00 |
| Avail Cap (c_a), veh/h              | 0        | 0    | 0    | 225  | 448      | 177      | 153      | 0    |
| Upstream Filter (I)                 | 0.00     | 0.00 | 0.00 | 0.93 | 0.93     | 0.95     | 1.00     | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0      | 0.0  | 0.0  | 34.3 | 14.7     | 32.6     | 40.7     | 0.0  |
| Incr Delay (d2), s/veh              | 0.0      | 0.0  | 0.0  | 0.3  | 12.8     | 1.2      | 62.5     | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0      | 0.0  |
| Control Delay (d), s/veh            | 0.0      | 0.0  | 0.0  | 34.6 | 27.5     | 33.8     | 103.1    | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0      | 0.0  | 0.0  | 0.7  | 2.8      | 1.1      | 3.0      | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0      | 0.0  | 0.0  | 0.0  | 1.6      | 0.1      | 2.7      | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0      | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00     | 0.00 | 0.00 | 1.00 | 1.00     | 1.00     | 1.00     | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0      | 0.0  | 0.0  | 0.7  | 4.4      | 1.1      | 5.7      | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00     | 0.00 | 0.00 | 0.37 | 0.56     | 0.14     | 0.96     | 0.00 |
| Initial Q (Qb), veh                 | 0.0      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0      | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0      | 0.0  |
| Sat Delay (ds), s/veh               | 0.0      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0      | 0.0  |
| Sat Q (Qs), veh                     | 0.0      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0      | 0.0  |
| Sat Cap (cs), veh/h                 | 0        | 0    | 0    | 0    | 0        | 0        | 0        | 0    |
| Initial Q Clear Time (tc), h        | 0.0      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0      | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 4    | 0    | 6    | 0    | 0    | 8    |
| Lane Assignment             |      | T    | T    |      | T    |      |      | T    |
| Lanes in Grp                | 0    | 1    | 1    | 0    | 1    | 0    | 0    | 1    |
| Grp Vol (v), veh/h          | 0    | 185  | 260  | 0    | 284  | 0    | 0    | 250  |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1777 | 1870 | 0    | 1777 | 0    | 0    | 1870 |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 11.9 | 0.0  | 6.6  | 0.0  | 0.0  | 10.8 |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 11.9 | 0.0  | 6.6  | 0.0  | 0.0  | 10.8 |
| Lane Grp Cap (c), veh/h     | 0    | 976  | 337  | 0    | 705  | 0    | 0    | 419  |
| V/C Ratio (X)               | 0.00 | 0.19 | 0.77 | 0.00 | 0.40 | 0.00 | 0.00 | 0.60 |
| Avail Cap (c_a), veh/h      | 0    | 976  | 542  | 0    | 705  | 0    | 0    | 507  |
| Upstream Filter (I)         | 0.00 | 0.95 | 1.00 | 0.00 | 0.93 | 0.00 | 0.00 | 0.93 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 35.1 | 0.0  | 10.3 | 0.0  | 0.0  | 31.3 |
| Incr Delay (d2), s/veh      | 0.0  | 0.4  | 3.8  | 0.0  | 1.6  | 0.0  | 0.0  | 1.3  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.4  | 38.9 | 0.0  | 11.9 | 0.0  | 0.0  | 32.5 |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 5.0  | 0.0  | 1.9  | 0.0  | 0.0  | 4.4  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 6: 12th Ave & Hanford Armona Rd

PM 2024+Project  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.1  | 0.4  | 0.0  | 0.3  | 0.0  | 0.0  | 0.1  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.1  | 5.3  | 0.0  | 2.2  | 0.0  | 0.0  | 4.6  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.03 | 0.00 | 0.04 | 0.00 | 0.00 | 0.02 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 14   | 0    | 16   | 0    | 0    | 18   |
| Lane Assignment                  | T+R  |      | R    | T+R  |      | R    |      |      |
| Lanes in Grp                     | 0    | 1    | 1    | 0    | 1    | 0    | 0    | 1    |
| Grp Vol (v), veh/h               | 0    | 190  | 60   | 0    | 271  | 0    | 0    | 268  |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1802 | 1460 | 0    | 1663 | 0    | 0    | 1460 |
| Q Serve Time (g_s), s            | 0.0  | 0.0  | 3.2  | 0.0  | 7.1  | 0.0  | 0.0  | 15.7 |
| Cycle Q Clear Time (g_c), s      | 0.0  | 0.0  | 3.2  | 0.0  | 7.1  | 0.0  | 0.0  | 15.7 |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.21 | 1.00 | 0.00 | 0.69 | 0.00 | 0.00 | 1.00 |
| Lane Grp Cap (c), veh/h          | 0    | 990  | 263  | 0    | 660  | 0    | 0    | 327  |
| V/C Ratio (X)                    | 0.00 | 0.19 | 0.23 | 0.00 | 0.41 | 0.00 | 0.00 | 0.82 |
| Avail Cap (c_a), veh/h           | 0    | 990  | 423  | 0    | 660  | 0    | 0    | 396  |
| Upstream Filter (I)              | 0.00 | 0.95 | 1.00 | 0.00 | 0.93 | 0.00 | 0.00 | 0.93 |
| Uniform Delay (d1), s/veh        | 0.0  | 0.0  | 31.5 | 0.0  | 11.0 | 0.0  | 0.0  | 33.2 |
| Incr Delay (d2), s/veh           | 0.0  | 0.4  | 0.4  | 0.0  | 1.8  | 0.0  | 0.0  | 10.1 |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 0.4  | 32.0 | 0.0  | 12.7 | 0.0  | 0.0  | 43.3 |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.0  | 1.0  | 0.0  | 2.0  | 0.0  | 0.0  | 5.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.1  | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  | 0.9  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.1  | 1.1  | 0.0  | 2.3  | 0.0  | 0.0  | 6.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.00 | 0.27 | 0.00 | 0.04 | 0.00 | 0.00 | 3.03 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 28.3 |
| HCM 7th LOS                  | C    |

# HCM 7th Signalized Intersection Capacity Analysis

## 7: 11th Ave & Hanford Armona Rd

PM 2024+Project  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |  |  |  |  |                                                                                   |   |  |  |  |  |  |
| Traffic Volume (veh/h)        | 168                                                                               | 235                                                                               | 44                                                                                | 83                                                                                | 244                                                                               | 91                                                                                | 70                                                                                  | 357                                                                                 | 75                                                                                  | 112                                                                                 | 332                                                                                 | 226                                                                                 |
| Future Volume (veh/h)         | 168                                                                               | 235                                                                               | 44                                                                                | 83                                                                                | 244                                                                               | 91                                                                                | 70                                                                                  | 357                                                                                 | 75                                                                                  | 112                                                                                 | 332                                                                                 | 226                                                                                 |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                                | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 183                                                                               | 255                                                                               | 48                                                                                | 90                                                                                | 265                                                                               | 99                                                                                | 76                                                                                  | 388                                                                                 | 82                                                                                  | 122                                                                                 | 361                                                                                 | 246                                                                                 |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Cap, veh/h                    | 487                                                                               | 1029                                                                              | 803                                                                               | 555                                                                               | 714                                                                               | 267                                                                               | 236                                                                                 | 675                                                                                 | 527                                                                                 | 245                                                                                 | 675                                                                                 | 527                                                                                 |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Prop Arrive On Green          | 0.55                                                                              | 0.55                                                                              | 0.55                                                                              | 0.55                                                                              | 0.55                                                                              | 0.53                                                                              | 0.36                                                                                | 0.36                                                                                | 0.36                                                                                | 0.36                                                                                | 0.36                                                                                | 0.36                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 19.3                                                                              | 10.9                                                                              | 9.5                                                                               | 14.1                                                                              | 0.0                                                                               | 12.7                                                                              | 32.2                                                                                | 24.0                                                                                | 19.6                                                                                | 35.7                                                                                | 23.4                                                                                | 22.7                                                                                |
| Ln Grp LOS                    | B                                                                                 | B                                                                                 | A                                                                                 | B                                                                                 |                                                                                   | B                                                                                 | C                                                                                   | C                                                                                   | B                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h           |                                                                                   | 486                                                                               |                                                                                   |                                                                                   | 454                                                                               |                                                                                   |                                                                                     | 546                                                                                 |                                                                                     |                                                                                     | 729                                                                                 |                                                                                     |
| Approach Delay, s/veh         |                                                                                   | 13.9                                                                              |                                                                                   |                                                                                   | 12.9                                                                              |                                                                                   |                                                                                     | 24.5                                                                                |                                                                                     |                                                                                     | 25.3                                                                                |                                                                                     |
| Approach LOS                  |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer:                        |                                                                                   | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                   | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                   |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Case No                       |                                                                                   | 5.0                                                                               |                                                                                   |                                                                                   | 5.0                                                                               |                                                                                   | 5.0                                                                                 |                                                                                     | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      |                                                                                   | 36.5                                                                              |                                                                                   |                                                                                   | 53.5                                                                              |                                                                                   | 36.5                                                                                |                                                                                     | 53.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                   | 5.5                                                                               |                                                                                   | 5.5                                                                                 |                                                                                     | 5.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           |                                                                                   | 35.5                                                                              |                                                                                   |                                                                                   | 43.5                                                                              |                                                                                   | 35.5                                                                                |                                                                                     | 43.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    |                                                                                   | 4.3                                                                               |                                                                                   |                                                                                   | 4.5                                                                               |                                                                                   | 4.4                                                                                 |                                                                                     | 4.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       |                                                                                   | 23.8                                                                              |                                                                                   |                                                                                   | 24.8                                                                              |                                                                                   | 29.2                                                                                |                                                                                     | 13.1                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       |                                                                                   | 1.8                                                                               |                                                                                   |                                                                                   | 2.0                                                                               |                                                                                   | 1.8                                                                                 |                                                                                     | 1.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         |                                                                                   | 0.09                                                                              |                                                                                   |                                                                                   | 0.00                                                                              |                                                                                   | 0.62                                                                                |                                                                                     | 0.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   | 7                                                                                 |                                                                                   | 1                                                                                   |                                                                                     | 3                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 749                                                                               |                                                                                   |                                                                                   | 937                                                                               |                                                                                   | 850                                                                                 |                                                                                     | 991                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                   |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 1870                                                                              |                                                                                   |                                                                                   | 1870                                                                              |                                                                                   | 1870                                                                                |                                                                                     | 1298                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 12                                                                                |                                                                                   |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                  |                                                                                     | 18                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 1460                                                                              |                                                                                   |                                                                                   | 1460                                                                              |                                                                                   | 1460                                                                                |                                                                                     | 485                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                   | 0                                                                                   | 3                                                                                   |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 7: 11th Ave & Hanford Armona Rd

PM 2024+Project  
07/16/2024

|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     |      | L    |      | L    |      | L    |      | L    |
| Lanes in Grp                        | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 1    |
| Grp Vol (v), veh/h                  | 0    | 76   | 0    | 183  | 0    | 122  | 0    | 90   |
| Grp Sat Flow (s), veh/h/ln          | 0    | 749  | 0    | 937  | 0    | 850  | 0    | 991  |
| Q Serve Time (g_s), s               | 0.0  | 8.0  | 0.0  | 12.4 | 0.0  | 12.2 | 0.0  | 4.7  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 21.8 | 0.0  | 22.8 | 0.0  | 27.2 | 0.0  | 11.1 |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 749  | 0    | 937  | 0    | 850  | 0    | 991  |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 32.5 | 0.0  | 49.5 | 0.0  | 32.5 | 0.0  | 49.5 |
| Perm LT Serve Time (g_u), s         | 0.0  | 18.7 | 0.0  | 39.0 | 0.0  | 17.4 | 0.0  | 43.1 |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 8.0  | 0.0  | 12.4 | 0.0  | 12.2 | 0.0  | 4.7  |
| Time to First Blk (g_f), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Lane Grp Cap (c), veh/h             | 0    | 236  | 0    | 487  | 0    | 245  | 0    | 555  |
| V/C Ratio (X)                       | 0.00 | 0.32 | 0.00 | 0.38 | 0.00 | 0.50 | 0.00 | 0.16 |
| Avail Cap (c_a), veh/h              | 0    | 274  | 0    | 487  | 0    | 287  | 0    | 555  |
| Upstream Filter (I)                 | 0.00 | 1.00 | 0.00 | 0.62 | 0.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 31.4 | 0.0  | 17.9 | 0.0  | 34.2 | 0.0  | 13.4 |
| Incr Delay (d2), s/veh              | 0.0  | 0.8  | 0.0  | 1.4  | 0.0  | 1.6  | 0.0  | 0.6  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 32.2 | 0.0  | 19.3 | 0.0  | 35.7 | 0.0  | 14.1 |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 1.3  | 0.0  | 2.3  | 0.0  | 2.3  | 0.0  | 0.9  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.1  | 0.0  | 0.2  | 0.0  | 0.1  | 0.0  | 0.1  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 1.4  | 0.0  | 2.5  | 0.0  | 2.4  | 0.0  | 1.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.32 | 0.00 | 0.63 | 0.00 | 0.87 | 0.00 | 0.25 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 8    |
| Lane Assignment             |      | T    |      | T    |      | T    |      |      |
| Lanes in Grp                | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 388  | 0    | 255  | 0    | 361  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1870 | 0    | 1870 | 0    | 1870 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 15.1 | 0.0  | 6.4  | 0.0  | 13.8 | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 15.1 | 0.0  | 6.4  | 0.0  | 13.8 | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 675  | 0    | 1029 | 0    | 675  | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.57 | 0.00 | 0.25 | 0.00 | 0.53 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 769  | 0    | 1029 | 0    | 769  | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 1.00 | 0.00 | 0.62 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 23.2 | 0.0  | 10.5 | 0.0  | 22.8 | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.8  | 0.0  | 0.4  | 0.0  | 0.7  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 24.0 | 0.0  | 10.9 | 0.0  | 23.4 | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 5.9  | 0.0  | 2.1  | 0.0  | 5.4  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 7: 11th Ave & Hanford Armona Rd

PM 2024+Project  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.2  | 0.0  | 0.1  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 6.0  | 0.0  | 2.2  | 0.0  | 5.5  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.09 | 0.00 | 0.01 | 0.00 | 0.06 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 18   |
| Lane Assignment                  |      | R    |      | R    |      | R    |      | T+R  |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 1    |
| Grp Vol (v), veh/h               | 0    | 82   | 0    | 48   | 0    | 246  | 0    | 364  |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1460 | 0    | 1460 | 0    | 1460 | 0    | 1783 |
| Q Serve Time (g_s), s            | 0.0  | 3.4  | 0.0  | 1.4  | 0.0  | 11.7 | 0.0  | 10.5 |
| Cycle Q Clear Time (g_c), s      | 0.0  | 3.4  | 0.0  | 1.4  | 0.0  | 11.7 | 0.0  | 10.5 |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.27 |
| Lane Grp Cap (c), veh/h          | 0    | 527  | 0    | 803  | 0    | 527  | 0    | 981  |
| V/C Ratio (X)                    | 0.00 | 0.16 | 0.00 | 0.06 | 0.00 | 0.47 | 0.00 | 0.37 |
| Avail Cap (c_a), veh/h           | 0    | 600  | 0    | 803  | 0    | 600  | 0    | 981  |
| Upstream Filter (I)              | 0.00 | 1.00 | 0.00 | 0.62 | 0.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 19.5 | 0.0  | 9.4  | 0.0  | 22.1 | 0.0  | 11.6 |
| Incr Delay (d2), s/veh           | 0.0  | 0.1  | 0.0  | 0.1  | 0.0  | 0.6  | 0.0  | 1.1  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 19.6 | 0.0  | 9.5  | 0.0  | 22.7 | 0.0  | 12.7 |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 1.0  | 0.0  | 0.4  | 0.0  | 3.5  | 0.0  | 3.3  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.3  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 1.1  | 0.0  | 0.4  | 0.0  | 3.6  | 0.0  | 3.6  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.27 | 0.00 | 0.19 | 0.00 | 0.46 | 0.00 | 0.01 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 20.1 |
| HCM 7th LOS                  | C    |

# HCM 7th Signalized Intersection Capacity Analysis

## 8: 12th Ave & Hume Ave

PM 2024+Project  
07/16/2024

|                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|---|---|--|
|                               |  |  |  |  |  |  |      |   |   |  |
| Movement                      | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |      |   |   |  |
| Lane Configurations           |  |  |  |                                                                                   |  |  |      |   |   |  |
| Traffic Volume (veh/h)        | 9                                                                                 | 139                                                                               | 146                                                                               | 18                                                                                | 180                                                                               | 155                                                                               |      |   |   |  |
| Future Volume (veh/h)         | 9                                                                                 | 139                                                                               | 146                                                                               | 18                                                                                | 180                                                                               | 155                                                                               |      |   |   |  |
| Number                        | 3                                                                                 | 18                                                                                | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 |      |   |   |  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |      |   |   |  |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |  |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |      |   |   |  |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |  |
| Work Zone On Approach         | No                                                                                |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |      |   |   |  |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |  |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              |      |   |   |  |
| Adj Flow Rate, veh/h          | 10                                                                                | 151                                                                               | 159                                                                               | 20                                                                                | 196                                                                               | 168                                                                               |      |   |   |  |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |      |   |   |  |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |      |   |   |  |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |      |   |   |  |
| Cap, veh/h                    | 207                                                                               | 184                                                                               | 1278                                                                              | 161                                                                               | 925                                                                               | 1468                                                                              |      |   |   |  |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.67                                                                              | 1.67                                                                              |      |   |   |  |
| Prop Arrive On Green          | 0.13                                                                              | 0.13                                                                              | 0.78                                                                              | 0.78                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |  |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |  |
| Ln Grp Delay, s/veh           | 34.7                                                                              | 47.0                                                                              | 0.0                                                                               | 2.5                                                                               | 0.5                                                                               | 0.2                                                                               |      |   |   |  |
| Ln Grp LOS                    | C                                                                                 | D                                                                                 |                                                                                   | A                                                                                 | A                                                                                 | A                                                                                 |      |   |   |  |
| Approach Vol, veh/h           | 161                                                                               |                                                                                   | 179                                                                               |                                                                                   |                                                                                   | 364                                                                               |      |   |   |  |
| Approach Delay, s/veh         | 46.2                                                                              |                                                                                   | 2.5                                                                               |                                                                                   |                                                                                   | 0.4                                                                               |      |   |   |  |
| Approach LOS                  | D                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |      |   |   |  |
| Timer:                        |                                                                                   | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6    | 7 | 8 |  |
| Assigned Phs                  |                                                                                   |                                                                                   | 2                                                                                 | 8                                                                                 |                                                                                   |                                                                                   | 6    |   |   |  |
| Case No                       |                                                                                   |                                                                                   | 8.0                                                                               | 9.0                                                                               |                                                                                   |                                                                                   | 6.0  |   |   |  |
| Phs Duration (G+Y+Rc), s      |                                                                                   |                                                                                   | 74.6                                                                              | 15.4                                                                              |                                                                                   |                                                                                   | 74.6 |   |   |  |
| Change Period (Y+Rc), s       |                                                                                   |                                                                                   | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                   | 4.0  |   |   |  |
| Max Green (Gmax), s           |                                                                                   |                                                                                   | 53.0                                                                              | 29.0                                                                              |                                                                                   |                                                                                   | 53.0 |   |   |  |
| Max Allow Headway (MAH), s    |                                                                                   |                                                                                   | 4.0                                                                               | 4.3                                                                               |                                                                                   |                                                                                   | 4.4  |   |   |  |
| Max Q Clear (g_c+I1), s       |                                                                                   |                                                                                   | 4.1                                                                               | 11.1                                                                              |                                                                                   |                                                                                   | 4.7  |   |   |  |
| Green Ext Time (g_e), s       |                                                                                   |                                                                                   | 0.6                                                                               | 0.5                                                                               |                                                                                   |                                                                                   | 1.5  |   |   |  |
| Prob of Phs Call (p_c)        |                                                                                   |                                                                                   | 1.00                                                                              | 0.98                                                                              |                                                                                   |                                                                                   | 1.00 |   |   |  |
| Prob of Max Out (p_x)         |                                                                                   |                                                                                   | 0.00                                                                              | 0.00                                                                              |                                                                                   |                                                                                   | 0.00 |   |   |  |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |  |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 5                                                                                 | 3                                                                                 |                                                                                   |                                                                                   | 1    |   |   |  |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 0                                                                                 | 1641                                                                              |                                                                                   |                                                                                   | 1110 |   |   |  |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |  |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 2                                                                                 | 8                                                                                 |                                                                                   |                                                                                   | 6    |   |   |  |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 1629                                                                              | 0                                                                                 |                                                                                   |                                                                                   | 1870 |   |   |  |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |  |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 12                                                                                | 18                                                                                |                                                                                   |                                                                                   | 16   |   |   |  |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 205                                                                               | 1460                                                                              |                                                                                   |                                                                                   | 0    |   |   |  |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |  |
| Assigned Mvmt                 |                                                                                   | 0                                                                                 | 5                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 1    | 0 | 0 |  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 8: 12th Ave & Hume Ave

PM 2024+Project  
07/16/2024

|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     | L    |      |      |      |      | L    |      |      |
| Lanes in Grp                        | 0    | 0    | 1    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 10   | 0    | 0    | 196  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 1641 | 0    | 0    | 1110 | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.5  | 0.0  | 0.0  | 0.6  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.5  | 0.0  | 0.0  | 2.7  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 1641 | 0    | 0    | 1110 | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 70.6 | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 68.5 | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.6  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 70.6 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 207  | 0    | 0    | 925  | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 | 0.21 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 529  | 0    | 0    | 925  | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.96 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 34.6 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  | 0.5  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 34.7 | 0.0  | 0.0  | 0.5  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 8    | 0    | 0    | 6    | 0    | 0    |
| Lane Assignment             | T    |      |      |      |      |      |      |      |
| Lanes in Grp                | 0    | 0    | 0    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 0    | 0    | 0    | 0    | 168  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 0    | 0    | 0    | 0    | 1870 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 0    | 0    | 0    | 0    | 1468 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.11 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 0    | 0    | 0    | 0    | 1468 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.96 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

Baseline

Synchro 9 Report



# HCM 7th Signalized Intersection Capacity Analysis 8: 12th Ave & Hume Ave

PM 2024+Project  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 18   | 0    | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      |      |      |      |      |
| Lanes in Grp                     | 0    | 1    | 1    | 0    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 179  | 151  | 0    | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1833 | 1460 | 0    | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 2.1  | 9.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 2.1  | 9.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.11 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1439 | 184  | 0    | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.12 | 0.82 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1439 | 470  | 0    | 0    | 0    | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 2.3  | 38.3 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.2  | 8.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 2.5  | 47.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.3  | 3.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.1  | 0.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.3  | 3.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.01 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 11.4 |
| HCM 7th LOS                  | B    |



# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

PM 2026  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |                                                                                   |                                                                                   |                                                                                   |  |                                                                                   |  |  |  |                                                                                     |                                                                                     |  |  |
| Traffic Volume (veh/h)        | 0                                                                                 | 0                                                                                 | 0                                                                                 | 182                                                                               | 0                                                                                 | 469                                                                               | 31                                                                                  | 1049                                                                                | 0                                                                                   | 0                                                                                   | 1256                                                                                | 584                                                                                 |
| Future Volume (veh/h)         | 0                                                                                 | 0                                                                                 | 0                                                                                 | 182                                                                               | 0                                                                                 | 469                                                                               | 31                                                                                  | 1049                                                                                | 0                                                                                   | 0                                                                                   | 1256                                                                                | 584                                                                                 |
| Number                        |                                                                                   |                                                                                   |                                                                                   | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         |                                                                                   |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |                                                                                     | No                                                                                  |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        |                                                                                   |                                                                                   |                                                                                   | 1723                                                                              | 0                                                                                 | 1723                                                                              | 1723                                                                                | 1870                                                                                | 0                                                                                   | 0                                                                                   | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          |                                                                                   |                                                                                   |                                                                                   | 198                                                                               | 0                                                                                 | 510                                                                               | 34                                                                                  | 1140                                                                                | 0                                                                                   | 0                                                                                   | 1365                                                                                | 635                                                                                 |
| Peak Hour Factor              |                                                                                   |                                                                                   |                                                                                   | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          |                                                                                   |                                                                                   |                                                                                   | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 0                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                 |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Cap, veh/h                    |                                                                                   |                                                                                   |                                                                                   | 732                                                                               | 0                                                                                 | 591                                                                               | 42                                                                                  | 2428                                                                                | 0                                                                                   | 0                                                                                   | 3135                                                                                | 896                                                                                 |
| HCM Platoon Ratio             |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.33                                                                                | 0.33                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Prop Arrive On Green          |                                                                                   |                                                                                   |                                                                                   | 0.23                                                                              | 0.00                                                                              | 0.23                                                                              | 0.01                                                                                | 0.23                                                                                | 0.00                                                                                | 0.00                                                                                | 0.61                                                                                | 0.61                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           |                                                                                   |                                                                                   |                                                                                   | 29.0                                                                              | 0.0                                                                               | 43.7                                                                              | 72.3                                                                                | 21.5                                                                                | 0.0                                                                                 | 0.0                                                                                 | 9.7                                                                                 | 16.7                                                                                |
| Ln Grp LOS                    |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   | D                                                                                 | E                                                                                   | C                                                                                   |                                                                                     |                                                                                     | A                                                                                   | B                                                                                   |
| Approach Vol, veh/h           |                                                                                   |                                                                                   |                                                                                   | 708                                                                               |                                                                                   |                                                                                   |                                                                                     | 1174                                                                                |                                                                                     |                                                                                     |                                                                                     | 2000                                                                                |
| Approach Delay, s/veh         |                                                                                   |                                                                                   |                                                                                   | 39.6                                                                              |                                                                                   |                                                                                   |                                                                                     | 23.0                                                                                |                                                                                     |                                                                                     |                                                                                     | 11.9                                                                                |
| Approach LOS                  |                                                                                   |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |                                                                                     | B                                                                                   |
| Timer:                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  |                                                                                   | 2                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                 | 6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       |                                                                                   | 4.0                                                                               | 9.0                                                                               |                                                                                   | 2.0                                                                               | 7.0                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      |                                                                                   | 66.2                                                                              | 24.8                                                                              |                                                                                   | 6.3                                                                               | 59.9                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       |                                                                                   | 5.5                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 5.5                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           |                                                                                   | 57.5                                                                              | 24.0                                                                              |                                                                                   | 6.0                                                                               | 47.5                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    |                                                                                   | 4.0                                                                               | 4.3                                                                               |                                                                                   | 4.1                                                                               | 4.1                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       |                                                                                   | 27.3                                                                              | 19.4                                                                              |                                                                                   | 3.9                                                                               | 29.0                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       |                                                                                   | 5.8                                                                               | 1.5                                                                               |                                                                                   | 0.0                                                                               | 9.6                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.58                                                                              | 1.00                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         |                                                                                   | 0.01                                                                              | 0.89                                                                              |                                                                                   | 1.00                                                                              | 0.39                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   |                                                                                   |                                                                                   | 3                                                                                 |                                                                                   | 5                                                                                 | 1                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   |                                                                                   | 3183                                                                              |                                                                                   | 1641                                                                              | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 2                                                                                 | 8                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 3647                                                                              | 0                                                                                 |                                                                                   |                                                                                   | 5274                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 12                                                                                | 18                                                                                |                                                                                   | 16                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 0                                                                                 | 2569                                                                              |                                                                                   | 1460                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 0                                                                                 | 3                                                                                 | 0                                                                                 | 5                                                                                 | 1                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

PM 2026  
07/16/2024

|                                     |      |      |      |          |      |      |      |      |
|-------------------------------------|------|------|------|----------|------|------|------|------|
| Lane Assignment                     | L    |      |      | L (Prot) |      |      |      |      |
| Lanes in Grp                        | 0    | 0    | 2    | 0        | 1    | 0    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 198  | 0        | 34   | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 1591 | 0        | 1641 | 0    | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 4.6  | 0.0      | 1.9  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 4.6  | 0.0      | 1.9  | 0.0  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 1591 | 0        | 0    | 0    | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0        | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 55.9 | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 1.00 | 0.00     | 1.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 732  | 0        | 42   | 0    | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.27 | 0.00     | 0.82 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 843  | 0        | 108  | 0    | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 1.00 | 0.00     | 0.87 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 28.8 | 0.0      | 44.9 | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.2  | 0.0      | 27.4 | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 29.0 | 0.0      | 72.3 | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 1.6  | 0.0      | 0.7  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0      | 0.3  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 0.00 | 1.00 | 0.00     | 1.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 1.6  | 0.0      | 1.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.16 | 0.00     | 0.07 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0        | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 8    | 0    | 0    | 6    | 0    | 0    |
| Lane Assignment             | T    |      |      | T    |      |      |      |      |
| Lanes in Grp                | 0    | 2    | 0    | 0    | 0    | 3    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 1140 | 0    | 0    | 0    | 1365 | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1777 | 0    | 0    | 0    | 1702 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 25.3 | 0.0  | 0.0  | 0.0  | 12.8 | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 25.3 | 0.0  | 0.0  | 0.0  | 12.8 | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 2428 | 0    | 0    | 0    | 3135 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.47 | 0.00 | 0.00 | 0.00 | 0.44 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 2428 | 0    | 0    | 0    | 3135 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.87 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 21.0 | 0.0  | 0.0  | 0.0  | 9.3  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.6  | 0.0  | 0.0  | 0.0  | 0.4  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 21.5 | 0.0  | 0.0  | 0.0  | 9.7  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 11.7 | 0.0  | 0.0  | 0.0  | 3.6  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

PM 2026  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 11.9 | 0.0  | 0.0  | 0.0  | 3.7  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.54 | 0.00 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 18   | 0    | 0    | 16   | 0    | 0    |
| Lane Assignment                  | R    |      | R    |      |      |      |      |      |
| Lanes in Grp                     | 0    | 0    | 2    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 0    | 510  | 0    | 0    | 635  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 0    | 1285 | 0    | 0    | 1460 | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 0.0  | 17.4 | 0.0  | 0.0  | 27.0 | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 0.0  | 17.4 | 0.0  | 0.0  | 27.0 | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 0    | 591  | 0    | 0    | 896  | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.00 | 0.86 | 0.00 | 0.00 | 0.71 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 0    | 680  | 0    | 0    | 896  | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 0.0  | 33.7 | 0.0  | 0.0  | 12.0 | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.0  | 10.0 | 0.0  | 0.0  | 4.7  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 0.0  | 43.7 | 0.0  | 0.0  | 16.7 | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.0  | 4.9  | 0.0  | 0.0  | 6.5  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.0  | 0.8  | 0.0  | 0.0  | 1.2  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.0  | 5.7  | 0.0  | 0.0  | 7.7  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.00 | 0.35 | 0.00 | 0.00 | 1.56 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 20.3 |
| HCM 7th LOS                  | C    |

# HCM 7th Signalized Intersection Capacity Analysis

## 2: 12th Ave & SR 198 WB EB Ramps

PM 2026  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |  |                                                                                     |                                                                                     |  |  |
| Traffic Volume (veh/h)        | 452                                                                               | 0                                                                                 | 35                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 630                                                                                 | 133                                                                                 | 0                                                                                   | 907                                                                                 | 0                                                                                   |
| Future Volume (veh/h)         | 452                                                                               | 0                                                                                 | 35                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 630                                                                                 | 133                                                                                 | 0                                                                                   | 907                                                                                 | 0                                                                                   |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                |                                                                                   |                                                                                   |                                                                                   | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 0                                                                                 | 1723                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1870                                                                                | 1723                                                                                | 0                                                                                   | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 491                                                                               | 0                                                                                 | 38                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 685                                                                                 | 145                                                                                 | 0                                                                                   | 986                                                                                 | 0                                                                                   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 0                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Cap, veh/h                    | 612                                                                               | 0                                                                                 | 281                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2104                                                                                | 445                                                                                 | 0                                                                                   | 2561                                                                                | 1052                                                                                |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 2.00                                                                                | 2.00                                                                                | 1.00                                                                                | 2.00                                                                                | 2.00                                                                                |
| Prop Arrive On Green          | 0.19                                                                              | 0.00                                                                              | 0.19                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 37.6                                                                              | 0.0                                                                               | 30.7                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 0.6                                                                                 | 0.6                                                                                 | 0.0                                                                                 | 0.4                                                                                 | 0.0                                                                                 |
| Ln Grp LOS                    | D                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     | A                                                                                   | A                                                                                   |                                                                                     | A                                                                                   |                                                                                     |
| Approach Vol, veh/h           | 529                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 830                                                                                 |                                                                                     |                                                                                     | 986                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh         | 37.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.6                                                                                 |                                                                                     |                                                                                     | 0.4                                                                                 |                                                                                     |                                                                                     |
| Approach LOS                  | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Timer:                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                               | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       | 8.0                                                                               |                                                                                   | 9.0                                                                               |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 69.6                                                                              |                                                                                   | 21.4                                                                              |                                                                                   | 69.6                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | 5.5                                                                               |                                                                                   | 4.0                                                                               |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           | 50.5                                                                              |                                                                                   | 31.0                                                                              |                                                                                   | 50.5                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    | 4.1                                                                               |                                                                                   | 4.1                                                                               |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       | 2.0                                                                               |                                                                                   | 15.4                                                                              |                                                                                   | 2.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       | 3.3                                                                               |                                                                                   | 2.0                                                                               |                                                                                   | 4.9                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         | 0.00                                                                              |                                                                                   | 0.01                                                                              |                                                                                   | 0.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 5                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 1                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 0                                                                                 |                                                                                   | 3183                                                                              |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 3012                                                                              |                                                                                   | 0                                                                                 |                                                                                   | 3647                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 12                                                                                |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 617                                                                               |                                                                                   | 1460                                                                              |                                                                                   | 1460                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 2: 12th Ave & SR 198 WB EB Ramps

PM 2026  
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|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     | L    |      |      |      |      |      |      |      |
| Lanes in Grp                        | 0    | 0    | 0    | 2    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 0    | 491  | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 0    | 1591 | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.0  | 13.4 | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.0  | 13.4 | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 0    | 1591 | 0    | 0    | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 65.6 | 0.0  | 0.0  | 0.0  | 65.6 | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 0    | 612  | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.00 | 0.80 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 0    | 1088 | 0    | 0    | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 0.0  | 35.1 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.0  | 2.5  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 0.0  | 37.6 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.0  | 4.8  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.0  | 5.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.00 | 0.25 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 0    |
| Lane Assignment             | T    |      |      |      | T    |      |      |      |
| Lanes in Grp                | 0    | 1    | 0    | 0    | 0    | 2    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 417  | 0    | 0    | 0    | 986  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1777 | 0    | 0    | 0    | 1777 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 1281 | 0    | 0    | 0    | 2561 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.33 | 0.00 | 0.00 | 0.00 | 0.38 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 1281 | 0    | 0    | 0    | 2561 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.89 | 0.00 | 0.00 | 0.00 | 0.92 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.6  | 0.0  | 0.0  | 0.0  | 0.4  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.6  | 0.0  | 0.0  | 0.0  | 0.4  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

## HCM 7th Signalized Intersection Capacity Analysis

### 2: 12th Ave & SR 198 WB EB Ramps

PM 2026  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

#### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      | R    |      |      |      |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 413  | 0    | 38   | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1759 | 0    | 1460 | 0    | 1460 | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 0.0  | 0.0  | 2.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 0.0  | 0.0  | 2.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.35 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1268 | 0    | 281  | 0    | 1052 | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.33 | 0.00 | 0.14 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1268 | 0    | 499  | 0    | 1052 | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 0.89 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 0.0  | 0.0  | 30.5 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.6  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 0.6  | 0.0  | 30.7 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.0  | 0.0  | 0.6  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.2  | 0.0  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

#### Intersection Summary

|                              |     |
|------------------------------|-----|
| HCM 7th Control Delay, s/veh | 8.8 |
| HCM 7th LOS                  | A   |



| Intersection                  |         |        |         |        |         |         |        |
|-------------------------------|---------|--------|---------|--------|---------|---------|--------|
| Intersection Delay, s/veh 3.7 |         |        |         |        |         |         |        |
| Intersection LOS A            |         |        |         |        |         |         |        |
| Approach                      | EB      |        | WB      |        | NB      |         | SB     |
| Entry Lanes                   | 1       |        | 1       |        | 1       |         | 1      |
| Conflicting Circle Lanes      | 1       |        | 1       |        | 1       |         | 1      |
| Adj Approach Flow, veh/h      | 552     |        | 430     |        | 0       |         | 278    |
| Demand Flow Rate, veh/h       | 564     |        | 439     |        | 0       |         | 284    |
| Vehicles Circulating, veh/h   | 463     |        | 90      |        | 264     |         | 294    |
| Vehicles Exiting, veh/h       | 110     |        | 174     |        | 417     |         | 90     |
| Ped Vol Crossing Leg, #/h     | 0       |        | 0       |        | 0       |         | 0      |
| Ped Cap Adj                   | 1.000   |        | 1.000   |        | 1.000   |         | 1.000  |
| Approach Delay, s/veh         | 2.7     |        | 3.3     |        | 0.0     |         | 6.2    |
| Approach LOS                  | A       |        | A       |        | -       |         | A      |
| Lane                          | Left    | Bypass | Left    | Bypass | Left    | Left    | Bypass |
| Designated Moves              | LT      | R      | LT      | R      | LTR     | LT      | R      |
| Assumed Moves                 | LT      |        | LT      |        | LTR     | LT      |        |
| RT Channelized                |         | Free   |         | Free   |         |         | Free   |
| Lane Util                     | 1.000   |        | 1.000   |        | 1.000   | 1.000   |        |
| Follow-Up Headway, s          | 2.609   |        | 2.609   |        | 2.609   | 2.609   |        |
| Critical Headway, s           | 4.976   |        | 4.976   |        | 4.976   | 4.976   |        |
| A (Intercept)                 | 1380    |        | 1380    |        | 1380    | 1380    |        |
| B (Slope)                     | 1.02e-3 |        | 1.02e-3 |        | 1.02e-3 | 1.02e-3 |        |
| Entry Flow, veh/h             | 218     | 346    | 294     | 145    | 0       | 279     | 5      |
| Cap Entry Lane, veh/h         | 861     | 1938   | 1259    | 1938   | 1054    | 1022    | 1938   |
| Entry HV Adj Factor           | 0.979   | 0.980  | 0.979   | 0.980  | 1.000   | 0.980   | 0.980  |
| Flow Entry, veh/h             | 213     | 339    | 288     | 142    | 0       | 273     | 5      |
| Cap Entry, veh/h              | 843     | 1900   | 1232    | 1900   | 1054    | 1002    | 1900   |
| V/C Ratio                     | 0.253   | 0.178  | 0.234   | 0.075  | 0.000   | 0.273   | 0.003  |
| Control Delay, s/veh          | 7.0     | 0.0    | 5.0     | 0.0    | 3.4     | 6.3     | 0.0    |
| LOS                           | A       | A      | A       | A      | A       | A       | A      |
| 95th %tile Queue, veh         | 1       | 1      | 1       | 0      | 0       | 1       | 0      |

# HCM 7th Signalized Intersection Capacity Analysis

## 4: SR 198 EB Ramps & Hanford Armona Rd

PM 2026  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)        | 236                                                                               | 10                                                                                | 153                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 271                                                                                 | 64                                                                                  | 150                                                                                 | 203                                                                                 | 0                                                                                   |
| Future Volume (veh/h)         | 236                                                                               | 10                                                                                | 153                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 271                                                                                 | 64                                                                                  | 150                                                                                 | 203                                                                                 | 0                                                                                   |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                |                                                                                   |                                                                                   |                                                                                   | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 0                                                                                   |
| Adj Flow Rate, veh/h          | 257                                                                               | 11                                                                                | 166                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 295                                                                                 | 70                                                                                  | 163                                                                                 | 221                                                                                 | 0                                                                                   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Cap, veh/h                    | 425                                                                               | 0                                                                                 | 378                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 662                                                                                 | 157                                                                                 | 368                                                                                 | 390                                                                                 | 0                                                                                   |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Prop Arrive On Green          | 0.26                                                                              | 0.26                                                                              | 0.26                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 0.45                                                                                | 0.40                                                                                | 0.45                                                                                | 0.45                                                                                | 0.00                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 10.4                                                                              | 0.0                                                                               | 9.4                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 5.7                                                                                 | 6.6                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Ln Grp LOS                    | B                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     | A                                                                                   | A                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h           | 423                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 365                                                                                 |                                                                                     |                                                                                     | 384                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh         | 10.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 5.7                                                                                 |                                                                                     |                                                                                     | 6.6                                                                                 |                                                                                     |                                                                                     |
| Approach LOS                  | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Timer:                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       | 8.0                                                                               |                                                                                   | 9.0                                                                               |                                                                                   | 8.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 16.6                                                                              |                                                                                   | 11.2                                                                              |                                                                                   | 16.6                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | 5.5                                                                               |                                                                                   | 4.1                                                                               |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           | 52.5                                                                              |                                                                                   | 27.9                                                                              |                                                                                   | 52.5                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    | 4.1                                                                               |                                                                                   | 4.2                                                                               |                                                                                   | 4.4                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       | 5.9                                                                               |                                                                                   | 5.8                                                                               |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       | 1.4                                                                               |                                                                                   | 1.5                                                                               |                                                                                   | 1.8                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        | 1.00                                                                              |                                                                                   | 0.96                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         | 0.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 5                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 1                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 0                                                                                 |                                                                                   | 1641                                                                              |                                                                                   | 404                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 1461                                                                              |                                                                                   | 0                                                                                 |                                                                                   | 861                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 12                                                                                |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 347                                                                               |                                                                                   | 1460                                                                              |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 4: SR 198 EB Ramps & Hanford Armona Rd

PM 2026  
07/16/2024

| Lane Assignment                     |      |      |      | L    |      | L+T  |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lanes in Grp                        | 0    | 0    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 0    | 257  | 0    | 384  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 0    | 1641 | 0    | 1265 | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.0  | 3.8  | 0.0  | 3.4  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.0  | 3.8  | 0.0  | 7.3  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 0    | 1641 | 0    | 1033 | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 12.6 | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 8.7  | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 3.4  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 12.6 | 0.0  | 0.0  | 0.0  | 2.1  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 2.1  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.42 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 0    | 425  | 0    | 757  | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.00 | 0.61 | 0.00 | 0.51 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 0    | 1656 | 0    | 2817 | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 0.0  | 9.0  | 0.0  | 6.1  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.0  | 1.4  | 0.0  | 0.5  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 0.0  | 10.4 | 0.0  | 6.6  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.0  | 0.5  | 0.0  | 0.1  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.0  | 0.7  | 0.0  | 0.2  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.00 | 0.05 | 0.00 | 0.04 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 0    |
| Lane Assignment             |      |      |      |      |      |      |      |      |
| Lanes in Grp                | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 4: SR 198 EB Ramps & Hanford Armona Rd

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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      |      |      |      |      |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 365  | 0    | 166  | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1808 | 0    | 1460 | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 3.9  | 0.0  | 2.6  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 3.9  | 0.0  | 2.6  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.19 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 819  | 0    | 378  | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.45 | 0.00 | 0.44 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 3518 | 0    | 1473 | 0    | 0    | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 5.3  | 0.0  | 8.6  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.4  | 0.0  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 5.7  | 0.0  | 9.4  | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.1  | 0.0  | 0.3  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.1  | 0.0  | 0.1  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.2  | 0.0  | 0.4  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.02 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |     |
|------------------------------|-----|
| HCM 7th Control Delay, s/veh | 7.5 |
| HCM 7th LOS                  | A   |

| Intersection              |        |      |      |        |       |      |        |       |       |        |       |       |
|---------------------------|--------|------|------|--------|-------|------|--------|-------|-------|--------|-------|-------|
| Int Delay, s/veh          | 3.8    |      |      |        |       |      |        |       |       |        |       |       |
| Movement                  | EBL    | EBT  | EBR  | WBL    | WBT   | WBR  | NBL    | NBT   | NBR   | SBL    | SBT   | SBR   |
| Lane Configurations       |        | ↕    |      |        | ↕     |      |        | ↕     |       |        | ↕     |       |
| Traffic Vol, veh/h        | 0      | 323  | 87   | 34     | 231   | 0    | 99     | 0     | 38    | 0      | 0     | 0     |
| Future Vol, veh/h         | 0      | 323  | 87   | 34     | 231   | 0    | 99     | 0     | 38    | 0      | 0     | 0     |
| Conflicting Peds, #/hr    | 0      | 0    | 0    | 0      | 0     | 0    | 0      | 0     | 0     | 0      | 0     | 0     |
| Sign Control              | Free   | Free | Free | Free   | Free  | Free | Stop   | Stop  | Stop  | Stop   | Stop  | Stop  |
| RT Channelized            | -      | -    | None | -      | -     | None | -      | -     | None  | -      | -     | None  |
| Storage Length            | -      | -    | -    | -      | -     | -    | -      | -     | -     | -      | -     | -     |
| Veh in Median Storage, #  | -      | 0    | -    | -      | 0     | -    | -      | 0     | -     | -      | 0     | -     |
| Grade, %                  | -      | 0    | -    | -      | 0     | -    | -      | 0     | -     | -      | 0     | -     |
| Peak Hour Factor          | 92     | 92   | 92   | 92     | 92    | 92   | 92     | 92    | 92    | 92     | 92    | 92    |
| Heavy Vehicles, %         | 2      | 2    | 2    | 2      | 2     | 2    | 2      | 2     | 2     | 2      | 2     | 2     |
| Mvmt Flow                 | 0      | 351  | 95   | 37     | 251   | 0    | 108    | 0     | 41    | 0      | 0     | 0     |
| Major/Minor               | Major1 |      |      | Major2 |       |      | Minor1 |       |       | Minor2 |       |       |
| Conflicting Flow All      | 251    | 0    | 0    | 446    | 0     | 0    | 723    | 723   | 398   | 676    | 771   | 251   |
| Stage 1                   | -      | -    | -    | -      | -     | -    | 398    | 398   | -     | 325    | 325   | -     |
| Stage 2                   | -      | -    | -    | -      | -     | -    | 325    | 325   | -     | 351    | 446   | -     |
| Critical Hdwy             | 4.12   | -    | -    | 4.12   | -     | -    | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1       | -      | -    | -    | -      | -     | -    | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2       | -      | -    | -    | -      | -     | -    | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy            | 2.218  | -    | -    | 2.218  | -     | -    | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver        | 1314   | -    | -    | 1115   | -     | -    | 341    | 352   | 651   | 367    | 331   | 788   |
| Stage 1                   | -      | -    | -    | -      | -     | -    | 628    | 603   | -     | 687    | 649   | -     |
| Stage 2                   | -      | -    | -    | -      | -     | -    | 687    | 649   | -     | 666    | 574   | -     |
| Platoon blocked, %        | -      | -    | -    | -      | -     | -    | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver        | 1314   | -    | -    | 1115   | -     | -    | 328    | 339   | 651   | 331    | 318   | 788   |
| Mov Cap-2 Maneuver        | -      | -    | -    | -      | -     | -    | 328    | 339   | -     | 331    | 318   | -     |
| Stage 1                   | -      | -    | -    | -      | -     | -    | 628    | 603   | -     | 661    | 624   | -     |
| Stage 2                   | -      | -    | -    | -      | -     | -    | 661    | 624   | -     | 623    | 574   | -     |
| Approach                  | EB     |      |      | WB     |       |      | NB     |       |       | SB     |       |       |
| HCM Control Delay, s/v    | 0      |      |      | 1.07   |       |      | 20.41  |       |       | 0      |       |       |
| HCM LOS                   |        |      |      |        |       |      | C      |       |       | A      |       |       |
| Minor Lane/Major Mvmt     | NBLn1  | EBL  | EBT  | EBR    | WBL   | WBT  | WBR    | SBLn1 |       |        |       |       |
| Capacity (veh/h)          | 381    | 1314 | -    | -      | 231   | -    | -      | -     |       |        |       |       |
| HCM Lane V/C Ratio        | 0.391  | -    | -    | -      | 0.033 | -    | -      | -     |       |        |       |       |
| HCM Control Delay (s/veh) | 20.4   | 0    | -    | -      | 8.3   | 0    | -      | 0     |       |        |       |       |
| HCM Lane LOS              | C      | A    | -    | -      | A     | A    | -      | A     |       |        |       |       |
| HCM 95th %tile Q(veh)     | 1.8    | 0    | -    | -      | 0.1   | -    | -      | -     |       |        |       |       |

# HCM 7th Signalized Intersection Capacity Analysis

## 6: 12th Ave & Hanford Armona Rd

PM 2026  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |  |  |  |  |  |   |  |  |  |  |  |
| Traffic Volume (veh/h)        | 136                                                                               | 246                                                                               | 54                                                                                | 37                                                                                | 234                                                                               | 254                                                                               | 59                                                                                  | 320                                                                                 | 38                                                                                  | 340                                                                                 | 351                                                                                 | 171                                                                                 |
| Future Volume (veh/h)         | 136                                                                               | 246                                                                               | 54                                                                                | 37                                                                                | 234                                                                               | 254                                                                               | 59                                                                                  | 320                                                                                 | 38                                                                                  | 340                                                                                 | 351                                                                                 | 171                                                                                 |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                                | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 148                                                                               | 267                                                                               | 59                                                                                | 40                                                                                | 254                                                                               | 276                                                                               | 64                                                                                  | 348                                                                                 | 41                                                                                  | 370                                                                                 | 382                                                                                 | 186                                                                                 |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Cap, veh/h                    | 151                                                                               | 343                                                                               | 268                                                                               | 225                                                                               | 427                                                                               | 333                                                                               | 164                                                                                 | 1755                                                                                | 205                                                                                 | 449                                                                                 | 939                                                                                 | 451                                                                                 |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                                | 2.00                                                                                | 2.00                                                                                | 1.67                                                                                | 1.67                                                                                | 1.67                                                                                |
| Prop Arrive On Green          | 0.09                                                                              | 0.18                                                                              | 0.18                                                                              | 0.14                                                                              | 0.23                                                                              | 0.23                                                                              | 0.20                                                                                | 1.00                                                                                | 1.00                                                                                | 0.67                                                                                | 0.67                                                                                | 0.65                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 107.3                                                                             | 39.2                                                                              | 32.0                                                                              | 35.1                                                                              | 32.6                                                                              | 44.7                                                                              | 35.4                                                                                | 0.4                                                                                 | 0.4                                                                                 | 29.7                                                                                | 11.5                                                                                | 12.3                                                                                |
| Ln Grp LOS                    | F                                                                                 | D                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 | D                                                                                 | D                                                                                   | A                                                                                   | A                                                                                   | C                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h           |                                                                                   | 474                                                                               |                                                                                   |                                                                                   | 570                                                                               |                                                                                   |                                                                                     | 453                                                                                 |                                                                                     |                                                                                     | 938                                                                                 |                                                                                     |
| Approach Delay, s/veh         |                                                                                   | 59.6                                                                              |                                                                                   |                                                                                   | 38.7                                                                              |                                                                                   |                                                                                     | 5.4                                                                                 |                                                                                     |                                                                                     | 18.9                                                                                |                                                                                     |
| Approach LOS                  |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | A                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer:                        |                                                                                   | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                   | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  |                                                                                   | 2                                                                                 | 4                                                                                 | 3                                                                                 | 6                                                                                 | 5                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       |                                                                                   | 4.0                                                                               | 3.0                                                                               | 2.0                                                                               | 6.4                                                                               | 2.0                                                                               | 2.0                                                                                 | 3.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      |                                                                                   | 53.8                                                                              | 20.7                                                                              | 16.5                                                                              | 40.7                                                                              | 13.1                                                                              | 12.4                                                                                | 24.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       |                                                                                   | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                                 | 5.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           |                                                                                   | 44.7                                                                              | 24.5                                                                              | 5.3                                                                               | 35.2                                                                              | 4.0                                                                               | 6.9                                                                                 | 22.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    |                                                                                   | 4.0                                                                               | 4.1                                                                               | 4.1                                                                               | 4.6                                                                               | 4.1                                                                               | 4.1                                                                                 | 4.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       |                                                                                   | 2.0                                                                               | 14.4                                                                              | 4.0                                                                               | 38.7                                                                              | 5.1                                                                               | 10.2                                                                                | 18.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       |                                                                                   | 1.3                                                                               | 0.8                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        |                                                                                   | 1.00                                                                              | 1.00                                                                              | 0.64                                                                              | 1.00                                                                              | 0.80                                                                              | 0.98                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         |                                                                                   | 0.00                                                                              | 0.04                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.88                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   |                                                                                   |                                                                                   | 3                                                                                 | 1                                                                                 | 5                                                                                 | 7                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   |                                                                                   | 1641                                                                              | 916                                                                               | 1641                                                                              | 1641                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 2                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 3205                                                                              | 1870                                                                              |                                                                                   | 2328                                                                              |                                                                                   | 1870                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 12                                                                                | 14                                                                                |                                                                                   | 16                                                                                |                                                                                   | 18                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 375                                                                               | 1460                                                                              |                                                                                   | 1118                                                                              |                                                                                   | 1460                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 3                                                                                 | 1                                                                                 | 5                                                                                 | 7                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 6: 12th Ave & Hanford Armona Rd

PM 2026  
07/16/2024

| Lane Assignment                     | L (Prot) |      |      | L    | L (Prot) | L (Prot) | L (Prot) |      |
|-------------------------------------|----------|------|------|------|----------|----------|----------|------|
| Lanes in Grp                        | 0        | 0    | 0    | 1    | 1        | 1        | 1        | 0    |
| Grp Vol (v), veh/h                  | 0        | 0    | 0    | 40   | 370      | 64       | 148      | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0        | 0    | 0    | 1641 | 916      | 1641     | 1641     | 0    |
| Q Serve Time (g_s), s               | 0.0      | 0.0  | 0.0  | 2.0  | 36.7     | 3.1      | 8.2      | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0      | 0.0  | 0.0  | 2.0  | 36.7     | 3.1      | 8.2      | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0        | 0    | 0    | 0    | 916      | 0        | 0        | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0        | 0    | 0    | 0    | 0        | 0        | 0        | 0    |
| Perm LT Eff Green (g_p), s          | 0.0      | 0.0  | 0.0  | 0.0  | 36.7     | 0.0      | 0.0      | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0      | 0.0  | 0.0  | 0.0  | 36.7     | 0.0      | 0.0      | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0      | 0.0  | 0.0  | 0.0  | 36.7     | 0.0      | 0.0      | 0.0  |
| Time to First Blk (g_f), s          | 0.0      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0      | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0      | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00     | 0.00 | 0.00 | 1.00 | 1.00     | 1.00     | 1.00     | 0.00 |
| Lane Grp Cap (c), veh/h             | 0        | 0    | 0    | 225  | 449      | 164      | 151      | 0    |
| V/C Ratio (X)                       | 0.00     | 0.00 | 0.00 | 0.18 | 0.82     | 0.39     | 0.98     | 0.00 |
| Avail Cap (c_a), veh/h              | 0        | 0    | 0    | 225  | 449      | 164      | 151      | 0    |
| Upstream Filter (I)                 | 0.00     | 0.00 | 0.00 | 0.93 | 0.93     | 0.95     | 1.00     | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0      | 0.0  | 0.0  | 34.7 | 14.9     | 34.0     | 41.2     | 0.0  |
| Incr Delay (d2), s/veh              | 0.0      | 0.0  | 0.0  | 0.3  | 14.8     | 1.4      | 66.1     | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0      | 0.0  |
| Control Delay (d), s/veh            | 0.0      | 0.0  | 0.0  | 35.1 | 29.7     | 35.4     | 107.3    | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0      | 0.0  | 0.0  | 0.7  | 2.9      | 1.1      | 3.1      | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0      | 0.0  | 0.0  | 0.0  | 1.8      | 0.1      | 2.8      | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0      | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00     | 0.00 | 0.00 | 1.00 | 1.00     | 1.00     | 1.00     | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0      | 0.0  | 0.0  | 0.8  | 4.7      | 1.2      | 5.9      | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00     | 0.00 | 0.00 | 0.38 | 0.60     | 0.15     | 0.99     | 0.00 |
| Initial Q (Qb), veh                 | 0.0      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0      | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0      | 0.0  |
| Sat Delay (ds), s/veh               | 0.0      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0      | 0.0  |
| Sat Q (Qs), veh                     | 0.0      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0      | 0.0  |
| Sat Cap (cs), veh/h                 | 0        | 0    | 0    | 0    | 0        | 0        | 0        | 0    |
| Initial Q Clear Time (tc), h        | 0.0      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0      | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 4    | 0    | 6    | 0    | 0    | 8    |
| Lane Assignment             |      | T    | T    |      | T    |      |      | T    |
| Lanes in Grp                | 0    | 1    | 1    | 0    | 1    | 0    | 0    | 1    |
| Grp Vol (v), veh/h          | 0    | 192  | 267  | 0    | 290  | 0    | 0    | 254  |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1777 | 1870 | 0    | 1777 | 0    | 0    | 1870 |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 12.4 | 0.0  | 6.7  | 0.0  | 0.0  | 11.0 |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 12.4 | 0.0  | 6.7  | 0.0  | 0.0  | 11.0 |
| Lane Grp Cap (c), veh/h     | 0    | 973  | 343  | 0    | 717  | 0    | 0    | 427  |
| V/C Ratio (X)               | 0.00 | 0.20 | 0.78 | 0.00 | 0.40 | 0.00 | 0.00 | 0.59 |
| Avail Cap (c_a), veh/h      | 0    | 973  | 534  | 0    | 717  | 0    | 0    | 502  |
| Upstream Filter (I)         | 0.00 | 0.95 | 1.00 | 0.00 | 0.93 | 0.00 | 0.00 | 0.93 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 35.4 | 0.0  | 10.0 | 0.0  | 0.0  | 31.3 |
| Incr Delay (d2), s/veh      | 0.0  | 0.4  | 3.8  | 0.0  | 1.6  | 0.0  | 0.0  | 1.3  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.4  | 39.2 | 0.0  | 11.5 | 0.0  | 0.0  | 32.6 |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 5.2  | 0.0  | 1.9  | 0.0  | 0.0  | 4.6  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 6: 12th Ave & Hanford Armona Rd

PM 2026  
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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.1  | 0.4  | 0.0  | 0.3  | 0.0  | 0.0  | 0.2  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.1  | 5.6  | 0.0  | 2.2  | 0.0  | 0.0  | 4.7  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.03 | 0.00 | 0.04 | 0.00 | 0.00 | 0.02 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 14   | 0    | 16   | 0    | 0    | 18   |
| Lane Assignment                  | T+R  |      | R    | T+R  |      | R    |      |      |
| Lanes in Grp                     | 0    | 1    | 1    | 0    | 1    | 0    | 0    | 1    |
| Grp Vol (v), veh/h               | 0    | 197  | 59   | 0    | 278  | 0    | 0    | 276  |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1803 | 1460 | 0    | 1669 | 0    | 0    | 1460 |
| Q Serve Time (g_s), s            | 0.0  | 0.0  | 3.1  | 0.0  | 7.2  | 0.0  | 0.0  | 16.4 |
| Cycle Q Clear Time (g_c), s      | 0.0  | 0.0  | 3.1  | 0.0  | 7.2  | 0.0  | 0.0  | 16.4 |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.21 | 1.00 | 0.00 | 0.67 | 0.00 | 0.00 | 1.00 |
| Lane Grp Cap (c), veh/h          | 0    | 987  | 268  | 0    | 673  | 0    | 0    | 333  |
| V/C Ratio (X)                    | 0.00 | 0.20 | 0.22 | 0.00 | 0.41 | 0.00 | 0.00 | 0.83 |
| Avail Cap (c_a), veh/h           | 0    | 987  | 417  | 0    | 673  | 0    | 0    | 391  |
| Upstream Filter (I)              | 0.00 | 0.95 | 1.00 | 0.00 | 0.93 | 0.00 | 0.00 | 0.93 |
| Uniform Delay (d1), s/veh        | 0.0  | 0.0  | 31.6 | 0.0  | 10.6 | 0.0  | 0.0  | 33.4 |
| Incr Delay (d2), s/veh           | 0.0  | 0.4  | 0.4  | 0.0  | 1.7  | 0.0  | 0.0  | 11.3 |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 0.4  | 32.0 | 0.0  | 12.3 | 0.0  | 0.0  | 44.7 |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.0  | 1.0  | 0.0  | 2.0  | 0.0  | 0.0  | 5.3  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.1  | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  | 1.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.1  | 1.1  | 0.0  | 2.3  | 0.0  | 0.0  | 6.3  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.00 | 0.27 | 0.00 | 0.04 | 0.00 | 0.00 | 3.21 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 28.9 |
| HCM 7th LOS                  | C    |



# HCM 7th Signalized Intersection Capacity Analysis

## 7: 11th Ave & Hanford Armona Rd

PM 2026  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |  |  |  |  |                                                                                   |   |  |  |  |  |  |
| Traffic Volume (veh/h)        | 174                                                                               | 249                                                                               | 45                                                                                | 85                                                                                | 247                                                                               | 94                                                                                | 72                                                                                  | 371                                                                                 | 78                                                                                  | 116                                                                                 | 345                                                                                 | 231                                                                                 |
| Future Volume (veh/h)         | 174                                                                               | 249                                                                               | 45                                                                                | 85                                                                                | 247                                                                               | 94                                                                                | 72                                                                                  | 371                                                                                 | 78                                                                                  | 116                                                                                 | 345                                                                                 | 231                                                                                 |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                                | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 189                                                                               | 271                                                                               | 49                                                                                | 92                                                                                | 268                                                                               | 102                                                                               | 78                                                                                  | 403                                                                                 | 85                                                                                  | 126                                                                                 | 375                                                                                 | 251                                                                                 |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Cap, veh/h                    | 469                                                                               | 1010                                                                              | 788                                                                               | 530                                                                               | 697                                                                               | 265                                                                               | 237                                                                                 | 696                                                                                 | 543                                                                                 | 246                                                                                 | 696                                                                                 | 543                                                                                 |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Prop Arrive On Green          | 0.54                                                                              | 0.54                                                                              | 0.54                                                                              | 0.54                                                                              | 0.54                                                                              | 0.52                                                                              | 0.37                                                                                | 0.37                                                                                | 0.37                                                                                | 0.37                                                                                | 0.37                                                                                | 0.37                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 20.8                                                                              | 11.6                                                                              | 10.1                                                                              | 15.3                                                                              | 0.0                                                                               | 13.5                                                                              | 32.2                                                                                | 23.7                                                                                | 19.2                                                                                | 35.9                                                                                | 23.1                                                                                | 22.3                                                                                |
| Ln Grp LOS                    | C                                                                                 | B                                                                                 | B                                                                                 | B                                                                                 |                                                                                   | B                                                                                 | C                                                                                   | C                                                                                   | B                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h           |                                                                                   | 509                                                                               |                                                                                   |                                                                                   | 462                                                                               |                                                                                   |                                                                                     | 566                                                                                 |                                                                                     |                                                                                     | 752                                                                                 |                                                                                     |
| Approach Delay, s/veh         |                                                                                   | 14.9                                                                              |                                                                                   |                                                                                   | 13.8                                                                              |                                                                                   |                                                                                     | 24.2                                                                                |                                                                                     |                                                                                     | 25.0                                                                                |                                                                                     |
| Approach LOS                  |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer:                        |                                                                                   | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                   | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                   |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Case No                       |                                                                                   | 5.0                                                                               |                                                                                   |                                                                                   | 5.0                                                                               |                                                                                   | 5.0                                                                                 |                                                                                     | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      |                                                                                   | 37.9                                                                              |                                                                                   |                                                                                   | 53.1                                                                              |                                                                                   | 37.9                                                                                |                                                                                     | 53.1                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                   | 5.5                                                                               |                                                                                   | 5.5                                                                                 |                                                                                     | 5.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           |                                                                                   | 36.5                                                                              |                                                                                   |                                                                                   | 43.5                                                                              |                                                                                   | 36.5                                                                                |                                                                                     | 43.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    |                                                                                   | 4.4                                                                               |                                                                                   |                                                                                   | 4.5                                                                               |                                                                                   | 4.4                                                                                 |                                                                                     | 4.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       |                                                                                   | 24.8                                                                              |                                                                                   |                                                                                   | 26.5                                                                              |                                                                                   | 30.6                                                                                |                                                                                     | 14.2                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       |                                                                                   | 1.9                                                                               |                                                                                   |                                                                                   | 2.1                                                                               |                                                                                   | 1.8                                                                                 |                                                                                     | 1.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         |                                                                                   | 0.10                                                                              |                                                                                   |                                                                                   | 0.00                                                                              |                                                                                   | 0.70                                                                                |                                                                                     | 0.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   | 7                                                                                 |                                                                                   | 1                                                                                   |                                                                                     | 3                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 736                                                                               |                                                                                   |                                                                                   | 932                                                                               |                                                                                   | 836                                                                                 |                                                                                     | 976                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                   |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 1870                                                                              |                                                                                   |                                                                                   | 1870                                                                              |                                                                                   | 1870                                                                                |                                                                                     | 1291                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 12                                                                                |                                                                                   |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                  |                                                                                     | 18                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 1460                                                                              |                                                                                   |                                                                                   | 1460                                                                              |                                                                                   | 1460                                                                                |                                                                                     | 491                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                   | 0                                                                                   | 3                                                                                   |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 7: 11th Ave & Hanford Armona Rd

PM 2026  
07/16/2024

|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     |      | L    |      | L    |      | L    |      | L    |
| Lanes in Grp                        | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 1    |
| Grp Vol (v), veh/h                  | 0    | 78   | 0    | 189  | 0    | 126  | 0    | 92   |
| Grp Sat Flow (s), veh/h/ln          | 0    | 736  | 0    | 932  | 0    | 836  | 0    | 976  |
| Q Serve Time (g_s), s               | 0.0  | 8.5  | 0.0  | 13.5 | 0.0  | 12.9 | 0.0  | 5.1  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 22.8 | 0.0  | 24.5 | 0.0  | 28.6 | 0.0  | 12.2 |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 736  | 0    | 932  | 0    | 836  | 0    | 976  |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 33.9 | 0.0  | 49.1 | 0.0  | 33.9 | 0.0  | 49.1 |
| Perm LT Serve Time (g_u), s         | 0.0  | 19.5 | 0.0  | 38.1 | 0.0  | 18.2 | 0.0  | 42.0 |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 8.5  | 0.0  | 13.5 | 0.0  | 12.9 | 0.0  | 5.1  |
| Time to First Blk (g_f), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Lane Grp Cap (c), veh/h             | 0    | 237  | 0    | 469  | 0    | 246  | 0    | 530  |
| V/C Ratio (X)                       | 0.00 | 0.33 | 0.00 | 0.40 | 0.00 | 0.51 | 0.00 | 0.17 |
| Avail Cap (c_a), veh/h              | 0    | 271  | 0    | 469  | 0    | 284  | 0    | 530  |
| Upstream Filter (I)                 | 0.00 | 1.00 | 0.00 | 0.57 | 0.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 31.4 | 0.0  | 19.3 | 0.0  | 34.3 | 0.0  | 14.5 |
| Incr Delay (d2), s/veh              | 0.0  | 0.8  | 0.0  | 1.5  | 0.0  | 1.6  | 0.0  | 0.7  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 32.2 | 0.0  | 20.8 | 0.0  | 35.9 | 0.0  | 15.3 |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 1.4  | 0.0  | 2.5  | 0.0  | 2.4  | 0.0  | 1.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.1  | 0.0  | 0.2  | 0.0  | 0.1  | 0.0  | 0.1  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 1.4  | 0.0  | 2.7  | 0.0  | 2.5  | 0.0  | 1.1  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.33 | 0.00 | 0.69 | 0.00 | 0.91 | 0.00 | 0.27 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 8    |
| Lane Assignment             |      | T    |      | T    |      | T    |      |      |
| Lanes in Grp                | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 403  | 0    | 271  | 0    | 375  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1870 | 0    | 1870 | 0    | 1870 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 15.7 | 0.0  | 7.1  | 0.0  | 14.3 | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 15.7 | 0.0  | 7.1  | 0.0  | 14.3 | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 696  | 0    | 1010 | 0    | 696  | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.58 | 0.00 | 0.27 | 0.00 | 0.54 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 781  | 0    | 1010 | 0    | 781  | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 1.00 | 0.00 | 0.57 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 22.9 | 0.0  | 11.3 | 0.0  | 22.4 | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.9  | 0.0  | 0.4  | 0.0  | 0.7  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 23.7 | 0.0  | 11.6 | 0.0  | 23.1 | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 6.1  | 0.0  | 2.4  | 0.0  | 5.6  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 7: 11th Ave & Hanford Armona Rd

PM 2026  
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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.2  | 0.0  | 0.1  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 6.3  | 0.0  | 2.5  | 0.0  | 5.7  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.09 | 0.00 | 0.01 | 0.00 | 0.06 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 18   |
| Lane Assignment                  |      | R    |      | R    |      | R    |      | T+R  |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 1    |
| Grp Vol (v), veh/h               | 0    | 85   | 0    | 49   | 0    | 251  | 0    | 370  |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1460 | 0    | 1460 | 0    | 1460 | 0    | 1782 |
| Q Serve Time (g_s), s            | 0.0  | 3.5  | 0.0  | 1.5  | 0.0  | 11.9 | 0.0  | 11.1 |
| Cycle Q Clear Time (g_c), s      | 0.0  | 3.5  | 0.0  | 1.5  | 0.0  | 11.9 | 0.0  | 11.1 |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.28 |
| Lane Grp Cap (c), veh/h          | 0    | 543  | 0    | 788  | 0    | 543  | 0    | 962  |
| V/C Ratio (X)                    | 0.00 | 0.16 | 0.00 | 0.06 | 0.00 | 0.46 | 0.00 | 0.38 |
| Avail Cap (c_a), veh/h           | 0    | 610  | 0    | 788  | 0    | 610  | 0    | 962  |
| Upstream Filter (I)              | 0.00 | 1.00 | 0.00 | 0.57 | 0.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 19.0 | 0.0  | 10.0 | 0.0  | 21.7 | 0.0  | 12.3 |
| Incr Delay (d2), s/veh           | 0.0  | 0.1  | 0.0  | 0.1  | 0.0  | 0.6  | 0.0  | 1.2  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 19.2 | 0.0  | 10.1 | 0.0  | 22.3 | 0.0  | 13.5 |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 1.1  | 0.0  | 0.4  | 0.0  | 3.6  | 0.0  | 3.6  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.3  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 1.1  | 0.0  | 0.4  | 0.0  | 3.7  | 0.0  | 3.9  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.28 | 0.00 | 0.21 | 0.00 | 0.47 | 0.00 | 0.01 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 20.3 |
| HCM 7th LOS                  | C    |

# HCM 7th Signalized Intersection Capacity Analysis

## 8: 12th Ave & Hume Ave

PM 2026  
07/16/2024

|                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|---|---|---|
|                               |  |  |  |  |  |  |      |   |   |   |
| Movement                      | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |      |   |   |   |
| Lane Configurations           |  |  |  |                                                                                   |  |  |      |   |   |   |
| Traffic Volume (veh/h)        | 9                                                                                 | 142                                                                               | 172                                                                               | 19                                                                                | 193                                                                               | 175                                                                               |      |   |   |   |
| Future Volume (veh/h)         | 9                                                                                 | 142                                                                               | 172                                                                               | 19                                                                                | 193                                                                               | 175                                                                               |      |   |   |   |
| Number                        | 3                                                                                 | 18                                                                                | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 |      |   |   |   |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |      |   |   |   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |   |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |      |   |   |   |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |   |
| Work Zone On Approach         | No                                                                                |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |      |   |   |   |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              |      |   |   |   |
| Adj Flow Rate, veh/h          | 10                                                                                | 154                                                                               | 187                                                                               | 21                                                                                | 210                                                                               | 190                                                                               |      |   |   |   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |      |   |   |   |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |      |   |   |   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |      |   |   |   |
| Cap, veh/h                    | 210                                                                               | 187                                                                               | 1295                                                                              | 145                                                                               | 897                                                                               | 1466                                                                              |      |   |   |   |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |   |
| Prop Arrive On Green          | 0.13                                                                              | 0.13                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              |      |   |   |   |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Ln Grp Delay, s/veh           | 34.9                                                                              | 47.4                                                                              | 0.0                                                                               | 2.6                                                                               | 3.9                                                                               | 2.5                                                                               |      |   |   |   |
| Ln Grp LOS                    | C                                                                                 | D                                                                                 |                                                                                   | A                                                                                 | A                                                                                 | A                                                                                 |      |   |   |   |
| Approach Vol, veh/h           | 164                                                                               |                                                                                   | 208                                                                               |                                                                                   |                                                                                   | 400                                                                               |      |   |   |   |
| Approach Delay, s/veh         | 46.6                                                                              |                                                                                   | 2.6                                                                               |                                                                                   |                                                                                   | 3.3                                                                               |      |   |   |   |
| Approach LOS                  | D                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |      |   |   |   |
| Timer:                        |                                                                                   | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6    | 7 | 8 |   |
| Assigned Phs                  |                                                                                   |                                                                                   | 2                                                                                 | 8                                                                                 |                                                                                   |                                                                                   | 6    |   |   |   |
| Case No                       |                                                                                   |                                                                                   | 8.0                                                                               | 9.0                                                                               |                                                                                   |                                                                                   | 6.0  |   |   |   |
| Phs Duration (G+Y+Rc), s      |                                                                                   |                                                                                   | 75.3                                                                              | 15.7                                                                              |                                                                                   |                                                                                   | 75.3 |   |   |   |
| Change Period (Y+Rc), s       |                                                                                   |                                                                                   | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                   | 4.0  |   |   |   |
| Max Green (Gmax), s           |                                                                                   |                                                                                   | 55.0                                                                              | 28.0                                                                              |                                                                                   |                                                                                   | 55.0 |   |   |   |
| Max Allow Headway (MAH), s    |                                                                                   |                                                                                   | 4.0                                                                               | 4.3                                                                               |                                                                                   |                                                                                   | 4.4  |   |   |   |
| Max Q Clear (g_c+I1), s       |                                                                                   |                                                                                   | 4.5                                                                               | 11.4                                                                              |                                                                                   |                                                                                   | 9.9  |   |   |   |
| Green Ext Time (g_e), s       |                                                                                   |                                                                                   | 0.7                                                                               | 0.5                                                                               |                                                                                   |                                                                                   | 1.7  |   |   |   |
| Prob of Phs Call (p_c)        |                                                                                   |                                                                                   | 1.00                                                                              | 0.98                                                                              |                                                                                   |                                                                                   | 1.00 |   |   |   |
| Prob of Max Out (p_x)         |                                                                                   |                                                                                   | 0.00                                                                              | 0.00                                                                              |                                                                                   |                                                                                   | 0.00 |   |   |   |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 5                                                                                 | 3                                                                                 |                                                                                   |                                                                                   | 1    |   |   |   |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 0                                                                                 | 1641                                                                              |                                                                                   |                                                                                   | 1081 |   |   |   |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 2                                                                                 | 8                                                                                 |                                                                                   |                                                                                   | 6    |   |   |   |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 1652                                                                              | 0                                                                                 |                                                                                   |                                                                                   | 1870 |   |   |   |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 12                                                                                | 18                                                                                |                                                                                   |                                                                                   | 16   |   |   |   |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 185                                                                               | 1460                                                                              |                                                                                   |                                                                                   | 0    |   |   |   |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 0                                                                                 | 5                                                                                 | 3                                                                                 | 0                                                                                 | 0    | 1 | 0 | 0 |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 8: 12th Ave & Hume Ave

PM 2026  
07/16/2024

|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     |      |      | L    |      |      | L    |      |      |
| Lanes in Grp                        | 0    | 0    | 1    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 10   | 0    | 0    | 210  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 1641 | 0    | 0    | 1081 | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.5  | 0.0  | 0.0  | 5.3  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.5  | 0.0  | 0.0  | 7.9  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 1641 | 0    | 0    | 1081 | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 71.3 | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 68.8 | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 5.3  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 71.3 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 210  | 0    | 0    | 897  | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 | 0.23 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 505  | 0    | 0    | 897  | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.95 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 34.8 | 0.0  | 0.0  | 3.4  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  | 0.6  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 34.9 | 0.0  | 0.0  | 3.9  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  | 0.6  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  | 0.7  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.09 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 8    | 0    | 0    | 6    | 0    | 0    |
| Lane Assignment             | T    |      |      |      |      |      |      |      |
| Lanes in Grp                | 0    | 0    | 0    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 0    | 0    | 0    | 0    | 190  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 0    | 0    | 0    | 0    | 1870 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 2.2  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 2.2  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 0    | 0    | 0    | 0    | 1466 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.13 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 0    | 0    | 0    | 0    | 1466 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.95 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 2.4  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 2.5  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 8: 12th Ave & Hume Ave

PM 2026  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.4  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 18   | 0    | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      |      |      |      |      |
| Lanes in Grp                     | 0    | 1    | 1    | 0    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 208  | 154  | 0    | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1837 | 1460 | 0    | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 2.5  | 9.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 2.5  | 9.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.10 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1440 | 187  | 0    | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.14 | 0.82 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1440 | 449  | 0    | 0    | 0    | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 2.4  | 38.7 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.2  | 8.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 2.6  | 47.4 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.3  | 3.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.1  | 0.5  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.4  | 3.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.01 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 12.3 |
| HCM 7th LOS                  | B    |



# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

PM 2026+Project  
07/16/2024

|                               |  |  |  |  |  |  |   |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |                                                                                   |                                                                                   |                                                                                   |  |                                                                                   |  |  |  |                                                                                     |                                                                                     |  |  |
| Traffic Volume (veh/h)        | 0                                                                                 | 0                                                                                 | 0                                                                                 | 206                                                                               | 0                                                                                 | 469                                                                               | 31                                                                                  | 1073                                                                                | 0                                                                                   | 0                                                                                   | 1296                                                                                | 584                                                                                 |
| Future Volume (veh/h)         | 0                                                                                 | 0                                                                                 | 0                                                                                 | 206                                                                               | 0                                                                                 | 469                                                                               | 31                                                                                  | 1073                                                                                | 0                                                                                   | 0                                                                                   | 1296                                                                                | 584                                                                                 |
| Number                        |                                                                                   |                                                                                   |                                                                                   | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         |                                                                                   |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        |                                                                                   |                                                                                   |                                                                                   | 1723                                                                              | 0                                                                                 | 1723                                                                              | 1723                                                                                | 1870                                                                                | 0                                                                                   | 0                                                                                   | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          |                                                                                   |                                                                                   |                                                                                   | 224                                                                               | 0                                                                                 | 510                                                                               | 34                                                                                  | 1166                                                                                | 0                                                                                   | 0                                                                                   | 1409                                                                                | 635                                                                                 |
| Peak Hour Factor              |                                                                                   |                                                                                   |                                                                                   | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          |                                                                                   |                                                                                   |                                                                                   | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 0                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                 |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Cap, veh/h                    |                                                                                   |                                                                                   |                                                                                   | 729                                                                               | 0                                                                                 | 589                                                                               | 41                                                                                  | 2470                                                                                | 0                                                                                   | 0                                                                                   | 3225                                                                                | 922                                                                                 |
| HCM Platoon Ratio             |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.67                                                                                | 0.67                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Prop Arrive On Green          |                                                                                   |                                                                                   |                                                                                   | 0.23                                                                              | 0.00                                                                              | 0.23                                                                              | 0.02                                                                                | 0.47                                                                                | 0.00                                                                                | 0.00                                                                                | 0.63                                                                                | 0.63                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           |                                                                                   |                                                                                   |                                                                                   | 33.5                                                                              | 0.0                                                                               | 48.5                                                                              | 79.7                                                                                | 15.3                                                                                | 0.0                                                                                 | 0.0                                                                                 | 10.2                                                                                | 16.7                                                                                |
| Ln Grp LOS                    |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   | D                                                                                 | E                                                                                   | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h           |                                                                                   |                                                                                   |                                                                                   | 734                                                                               |                                                                                   |                                                                                   | 1200                                                                                |                                                                                     |                                                                                     | 2044                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh         |                                                                                   |                                                                                   |                                                                                   | 43.9                                                                              |                                                                                   |                                                                                   | 17.1                                                                                |                                                                                     |                                                                                     | 12.2                                                                                |                                                                                     |                                                                                     |
| Approach LOS                  |                                                                                   |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |
| Timer:                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  |                                                                                   | 2                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                 | 6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       |                                                                                   | 4.0                                                                               | 9.0                                                                               |                                                                                   | 2.0                                                                               | 7.0                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      |                                                                                   | 76.3                                                                              | 27.7                                                                              |                                                                                   | 6.6                                                                               | 69.7                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       |                                                                                   | 5.5                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 5.5                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           |                                                                                   | 66.5                                                                              | 28.0                                                                              |                                                                                   | 6.0                                                                               | 56.5                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    |                                                                                   | 4.0                                                                               | 4.3                                                                               |                                                                                   | 4.1                                                                               | 4.1                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       |                                                                                   | 25.4                                                                              | 21.9                                                                              |                                                                                   | 4.1                                                                               | 31.5                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       |                                                                                   | 6.2                                                                               | 1.9                                                                               |                                                                                   | 0.0                                                                               | 11.5                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.63                                                                              | 1.00                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         |                                                                                   | 0.00                                                                              | 0.59                                                                              |                                                                                   | 1.00                                                                              | 0.27                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   |                                                                                   |                                                                                   | 3                                                                                 |                                                                                   | 5                                                                                 | 1                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   |                                                                                   | 3183                                                                              |                                                                                   | 1641                                                                              | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 2                                                                                 | 8                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 3647                                                                              | 0                                                                                 |                                                                                   |                                                                                   | 5274                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 12                                                                                | 18                                                                                |                                                                                   | 16                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 0                                                                                 | 2569                                                                              |                                                                                   | 1460                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 0                                                                                 | 3                                                                                 | 0                                                                                 | 5                                                                                 | 1                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report



# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

PM 2026+Project  
07/16/2024

|                                     |      |      |      |          |      |      |      |      |
|-------------------------------------|------|------|------|----------|------|------|------|------|
| Lane Assignment                     |      |      | L    | L (Prot) |      |      |      |      |
| Lanes in Grp                        | 0    | 0    | 2    | 0        | 1    | 0    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 224  | 0        | 34   | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 1591 | 0        | 1641 | 0    | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 6.1  | 0.0      | 2.1  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 6.1  | 0.0      | 2.1  | 0.0  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 1591 | 0        | 0    | 0    | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0        | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 65.7 | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 1.00 | 0.00     | 1.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 729  | 0        | 41   | 0    | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.31 | 0.00     | 0.83 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 860  | 0        | 95   | 0    | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 1.00 | 0.00     | 0.86 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 33.2 | 0.0      | 50.9 | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.2  | 0.0      | 28.8 | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 33.5 | 0.0      | 79.7 | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 2.2  | 0.0      | 0.8  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0      | 0.3  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 0.00 | 1.00 | 0.00     | 1.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 2.2  | 0.0      | 1.2  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.21 | 0.00     | 0.07 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0        | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 8    | 0    | 0    | 6    | 0    | 0    |
| Lane Assignment             | T    |      | T    |      |      |      |      |      |
| Lanes in Grp                | 0    | 2    | 0    | 0    | 0    | 3    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 1166 | 0    | 0    | 0    | 1409 | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1777 | 0    | 0    | 0    | 1702 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 23.4 | 0.0  | 0.0  | 0.0  | 14.6 | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 23.4 | 0.0  | 0.0  | 0.0  | 14.6 | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 2470 | 0    | 0    | 0    | 3225 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.47 | 0.00 | 0.00 | 0.00 | 0.44 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 2470 | 0    | 0    | 0    | 3225 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.86 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 14.7 | 0.0  | 0.0  | 0.0  | 9.8  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.6  | 0.0  | 0.0  | 0.0  | 0.4  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 15.3 | 0.0  | 0.0  | 0.0  | 10.2 | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 9.6  | 0.0  | 0.0  | 0.0  | 4.3  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

PM 2026+Project  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 9.7  | 0.0  | 0.0  | 0.0  | 4.4  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.45 | 0.00 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 18   | 0    | 0    | 16   | 0    | 0    |
| Lane Assignment                  | R    |      |      | R    |      |      |      |      |
| Lanes in Grp                     | 0    | 0    | 2    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 0    | 510  | 0    | 0    | 635  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 0    | 1285 | 0    | 0    | 1460 | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 0.0  | 19.9 | 0.0  | 0.0  | 29.5 | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 0.0  | 19.9 | 0.0  | 0.0  | 29.5 | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 0    | 589  | 0    | 0    | 922  | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.00 | 0.87 | 0.00 | 0.00 | 0.69 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 0    | 694  | 0    | 0    | 922  | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 0.0  | 38.6 | 0.0  | 0.0  | 12.5 | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.0  | 9.9  | 0.0  | 0.0  | 4.2  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 0.0  | 48.5 | 0.0  | 0.0  | 16.7 | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.0  | 5.8  | 0.0  | 0.0  | 7.5  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.0  | 0.8  | 0.0  | 0.0  | 1.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.0  | 6.6  | 0.0  | 0.0  | 8.6  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.00 | 0.41 | 0.00 | 0.00 | 1.74 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 19.5 |
| HCM 7th LOS                  | B    |

# HCM 7th Signalized Intersection Capacity Analysis

## 2: 12th Ave & SR 198 WB EB Ramps

PM 2026+Project  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |  |                                                                                     |                                                                                     |  |  |
| Traffic Volume (veh/h)        | 452                                                                               | 0                                                                                 | 35                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 654                                                                                 | 147                                                                                 | 0                                                                                   | 971                                                                                 | 0                                                                                   |
| Future Volume (veh/h)         | 452                                                                               | 0                                                                                 | 35                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 654                                                                                 | 147                                                                                 | 0                                                                                   | 971                                                                                 | 0                                                                                   |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                |                                                                                   |                                                                                   |                                                                                   | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 0                                                                                 | 1723                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1870                                                                                | 1723                                                                                | 0                                                                                   | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 491                                                                               | 0                                                                                 | 38                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 711                                                                                 | 160                                                                                 | 0                                                                                   | 1055                                                                                | 0                                                                                   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 0                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Cap, veh/h                    | 599                                                                               | 0                                                                                 | 275                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2121                                                                                | 477                                                                                 | 0                                                                                   | 2615                                                                                | 1074                                                                                |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 2.00                                                                                | 2.00                                                                                |
| Prop Arrive On Green          | 0.19                                                                              | 0.00                                                                              | 0.19                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 0.74                                                                                | 0.72                                                                                | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 43.4                                                                              | 0.0                                                                               | 35.4                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 5.4                                                                                 | 5.5                                                                                 | 0.0                                                                                 | 0.4                                                                                 | 0.0                                                                                 |
| Ln Grp LOS                    | D                                                                                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     | A                                                                                   | A                                                                                   |                                                                                     | A                                                                                   |                                                                                     |
| Approach Vol, veh/h           | 529                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 871                                                                                 |                                                                                     |                                                                                     | 1055                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh         | 42.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 5.4                                                                                 |                                                                                     |                                                                                     | 0.4                                                                                 |                                                                                     |                                                                                     |
| Approach LOS                  | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Timer:                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                               | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       | 8.0                                                                               |                                                                                   | 9.0                                                                               |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 80.5                                                                              |                                                                                   | 23.5                                                                              |                                                                                   | 80.5                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | 5.5                                                                               |                                                                                   | 4.0                                                                               |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           | 59.5                                                                              |                                                                                   | 35.0                                                                              |                                                                                   | 59.5                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    | 4.1                                                                               |                                                                                   | 4.1                                                                               |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       | 11.2                                                                              |                                                                                   | 17.4                                                                              |                                                                                   | 2.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       | 3.5                                                                               |                                                                                   | 2.1                                                                               |                                                                                   | 5.4                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         | 0.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 5                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 1                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 0                                                                                 |                                                                                   | 3183                                                                              |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 2976                                                                              |                                                                                   | 0                                                                                 |                                                                                   | 3647                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 12                                                                                |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 648                                                                               |                                                                                   | 1460                                                                              |                                                                                   | 1460                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 2: 12th Ave & SR 198 WB EB Ramps

PM 2026+Project  
07/16/2024

|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     | L    |      |      |      |      |      |      |      |
| Lanes in Grp                        | 0    | 0    | 0    | 2    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 0    | 491  | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 0    | 1591 | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.0  | 15.4 | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.0  | 15.4 | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 0    | 1591 | 0    | 0    | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 76.5 | 0.0  | 0.0  | 0.0  | 76.5 | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 0    | 599  | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.00 | 0.82 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 0    | 1074 | 0    | 0    | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 0.0  | 40.5 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.0  | 2.8  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 0.0  | 43.4 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.0  | 5.6  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.0  | 5.9  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.00 | 0.29 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 0    |
| Lane Assignment             | T    |      |      |      | T    |      |      |      |
| Lanes in Grp                | 0    | 1    | 0    | 0    | 0    | 2    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 438  | 0    | 0    | 0    | 1055 | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1777 | 0    | 0    | 0    | 1777 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 9.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 9.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 1307 | 0    | 0    | 0    | 2615 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.34 | 0.00 | 0.00 | 0.00 | 0.40 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 1307 | 0    | 0    | 0    | 2615 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.78 | 0.00 | 0.00 | 0.00 | 0.91 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 4.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.5  | 0.0  | 0.0  | 0.0  | 0.4  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 5.4  | 0.0  | 0.0  | 0.0  | 0.4  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 2.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

## HCM 7th Signalized Intersection Capacity Analysis

### 2: 12th Ave & SR 198 WB EB Ramps

PM 2026+Project  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 2.3  | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.04 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

#### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      | R    |      |      |      |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 433  | 0    | 38   | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1754 | 0    | 1460 | 0    | 1460 | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 9.2  | 0.0  | 2.3  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 9.2  | 0.0  | 2.3  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.37 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1290 | 0    | 275  | 0    | 1074 | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.34 | 0.00 | 0.14 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1290 | 0    | 493  | 0    | 1074 | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 0.78 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 4.9  | 0.0  | 35.2 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.5  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 5.5  | 0.0  | 35.4 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 2.1  | 0.0  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 2.3  | 0.0  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.04 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

#### Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 11.3 |
| HCM 7th LOS                  | B    |

| Intersection                |         |        |         |        |         |         |        |
|-----------------------------|---------|--------|---------|--------|---------|---------|--------|
| Intersection Delay, s/veh   | 3.9     |        |         |        |         |         |        |
| Intersection LOS            | A       |        |         |        |         |         |        |
| Approach                    | EB      |        | WB      |        | NB      |         | SB     |
| Entry Lanes                 | 1       |        | 1       |        | 1       |         | 1      |
| Conflicting Circle Lanes    | 1       |        | 1       |        | 1       |         | 1      |
| Adj Approach Flow, veh/h    | 561     |        | 455     |        | 0       |         | 278    |
| Demand Flow Rate, veh/h     | 573     |        | 464     |        | 0       |         | 284    |
| Vehicles Circulating, veh/h | 483     |        | 90      |        | 273     |         | 319    |
| Vehicles Exiting, veh/h     | 115     |        | 183     |        | 437     |         | 90     |
| Ped Vol Crossing Leg, #/h   | 0       |        | 0       |        | 0       |         | 0      |
| Ped Cap Adj                 | 1.000   |        | 1.000   |        | 1.000   |         | 1.000  |
| Approach Delay, s/veh       | 2.9     |        | 3.6     |        | 0.0     |         | 6.4    |
| Approach LOS                | A       |        | A       |        | -       |         | A      |
| Lane                        | Left    | Bypass | Left    | Bypass | Left    | Left    | Bypass |
| Designated Moves            | LT      | R      | LT      | R      | LTR     | LT      | R      |
| Assumed Moves               | LT      |        | LT      |        | LTR     | LT      |        |
| RT Channelized              |         | Free   |         | Free   |         |         | Free   |
| Lane Util                   | 1.000   |        | 1.000   |        | 1.000   | 1.000   |        |
| Follow-Up Headway, s        | 2.609   |        | 2.609   |        | 2.609   | 2.609   |        |
| Critical Headway, s         | 4.976   |        | 4.976   |        | 4.976   | 4.976   |        |
| A (Intercept)               | 1380    |        | 1380    |        | 1380    | 1380    |        |
| B (Slope)                   | 1.02e-3 |        | 1.02e-3 |        | 1.02e-3 | 1.02e-3 |        |
| Entry Flow, veh/h           | 227     | 346    | 319     | 145    | 0       | 279     | 5      |
| Cap Entry Lane, veh/h       | 843     | 1938   | 1259    | 1938   | 1045    | 997     | 1938   |
| Entry HV Adj Factor         | 0.979   | 0.980  | 0.980   | 0.980  | 1.000   | 0.980   | 0.980  |
| Flow Entry, veh/h           | 222     | 339    | 313     | 142    | 0       | 273     | 5      |
| Cap Entry, veh/h            | 826     | 1900   | 1234    | 1900   | 1045    | 977     | 1900   |
| V/C Ratio                   | 0.269   | 0.178  | 0.253   | 0.075  | 0.000   | 0.280   | 0.003  |
| Control Delay, s/veh        | 7.3     | 0.0    | 5.2     | 0.0    | 3.4     | 6.5     | 0.0    |
| LOS                         | A       | A      | A       | A      | A       | A       | A      |
| 95th %tile Queue, veh       | 1       | 1      | 1       | 0      | 0       | 1       | 0      |

# HCM 7th Signalized Intersection Capacity Analysis

## 4: SR 198 EB Ramps & Hanford Armona Rd

PM 2026+Project  
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|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)        | 236                                                                               | 18                                                                                | 153                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 271                                                                                 | 96                                                                                  | 150                                                                                 | 203                                                                                 | 0                                                                                   |
| Future Volume (veh/h)         | 236                                                                               | 18                                                                                | 153                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 271                                                                                 | 96                                                                                  | 150                                                                                 | 203                                                                                 | 0                                                                                   |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                |                                                                                   |                                                                                   |                                                                                   | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 0                                                                                   |
| Adj Flow Rate, veh/h          | 257                                                                               | 20                                                                                | 166                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 295                                                                                 | 104                                                                                 | 163                                                                                 | 221                                                                                 | 0                                                                                   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Cap, veh/h                    | 421                                                                               | 0                                                                                 | 375                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 612                                                                                 | 216                                                                                 | 356                                                                                 | 388                                                                                 | 0                                                                                   |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Prop Arrive On Green          | 0.26                                                                              | 0.25                                                                              | 0.26                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 0.46                                                                                | 0.41                                                                                | 0.46                                                                                | 0.46                                                                                | 0.00                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 10.8                                                                              | 0.0                                                                               | 9.7                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 5.9                                                                                 | 6.7                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Ln Grp LOS                    | B                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     | A                                                                                   | A                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h           | 423                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 399                                                                                 |                                                                                     |                                                                                     | 384                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh         | 10.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 5.9                                                                                 |                                                                                     |                                                                                     | 6.7                                                                                 |                                                                                     |                                                                                     |
| Approach LOS                  | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Timer:                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                               | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       | 8.0                                                                               |                                                                                   | 9.0                                                                               |                                                                                   | 8.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 17.3                                                                              |                                                                                   | 11.3                                                                              |                                                                                   | 17.3                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | 5.5                                                                               |                                                                                   | 4.1                                                                               |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           | 52.5                                                                              |                                                                                   | 27.9                                                                              |                                                                                   | 52.5                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    | 4.1                                                                               |                                                                                   | 4.2                                                                               |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       | 6.5                                                                               |                                                                                   | 5.9                                                                               |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       | 1.5                                                                               |                                                                                   | 1.5                                                                               |                                                                                   | 1.8                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        | 1.00                                                                              |                                                                                   | 0.97                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         | 0.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 5                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 1                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 0                                                                                 |                                                                                   | 1641                                                                              |                                                                                   | 380                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 1321                                                                              |                                                                                   | 0                                                                                 |                                                                                   | 836                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 12                                                                                |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 466                                                                               |                                                                                   | 1460                                                                              |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 4: SR 198 EB Ramps & Hanford Armona Rd

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|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     |      |      |      | L    |      | L+T  |      |      |
| Lanes in Grp                        | 0    | 0    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 0    | 257  | 0    | 384  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 0    | 1641 | 0    | 1217 | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.0  | 3.9  | 0.0  | 3.5  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.0  | 3.9  | 0.0  | 8.0  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 0    | 1641 | 0    | 1001 | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 13.3 | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 8.8  | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 3.5  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 13.3 | 0.0  | 0.0  | 0.0  | 2.3  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 2.3  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.42 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 0    | 421  | 0    | 743  | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.00 | 0.61 | 0.00 | 0.52 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 0    | 1606 | 0    | 2672 | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 0.0  | 9.4  | 0.0  | 6.1  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.0  | 1.4  | 0.0  | 0.6  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 0.0  | 10.8 | 0.0  | 6.7  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.0  | 0.6  | 0.0  | 0.1  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.0  | 0.7  | 0.0  | 0.2  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.00 | 0.05 | 0.00 | 0.05 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 0    |
| Lane Assignment             |      |      |      |      |      |      |      |      |
| Lanes in Grp                | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

Baseline

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# HCM 7th Signalized Intersection Capacity Analysis 4: SR 198 EB Ramps & Hanford Armona Rd

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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      |      |      |      |      |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 399  | 0    | 166  | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1787 | 0    | 1460 | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 4.5  | 0.0  | 2.7  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 4.5  | 0.0  | 2.7  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.26 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 828  | 0    | 375  | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.48 | 0.00 | 0.44 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 3372 | 0    | 1429 | 0    | 0    | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 5.5  | 0.0  | 8.9  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.4  | 0.0  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 5.9  | 0.0  | 9.7  | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.1  | 0.0  | 0.4  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.1  | 0.0  | 0.1  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.2  | 0.0  | 0.4  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.02 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |     |
|------------------------------|-----|
| HCM 7th Control Delay, s/veh | 7.7 |
| HCM 7th LOS                  | A   |

| Intersection              |        |      |      |        |       |      |        |       |       |        |       |       |
|---------------------------|--------|------|------|--------|-------|------|--------|-------|-------|--------|-------|-------|
| Int Delay, s/veh          | 4      |      |      |        |       |      |        |       |       |        |       |       |
| Movement                  | EBL    | EBT  | EBR  | WBL    | WBT   | WBR  | NBL    | NBT   | NBR   | SBL    | SBT   | SBR   |
| Lane Configurations       |        | ↕    |      |        | ↕     |      |        | ↕     |       |        | ↕     |       |
| Traffic Vol, veh/h        | 0      | 363  | 87   | 34     | 254   | 0    | 99     | 0     | 38    | 0      | 0     | 0     |
| Future Vol, veh/h         | 0      | 363  | 87   | 34     | 254   | 0    | 99     | 0     | 38    | 0      | 0     | 0     |
| Conflicting Peds, #/hr    | 0      | 0    | 0    | 0      | 0     | 0    | 0      | 0     | 0     | 0      | 0     | 0     |
| Sign Control              | Free   | Free | Free | Free   | Free  | Free | Stop   | Stop  | Stop  | Stop   | Stop  | Stop  |
| RT Channelized            | -      | -    | None | -      | -     | None | -      | -     | None  | -      | -     | None  |
| Storage Length            | -      | -    | -    | -      | -     | -    | -      | -     | -     | -      | -     | -     |
| Veh in Median Storage, #  | -      | 0    | -    | -      | 0     | -    | -      | 0     | -     | -      | 0     | -     |
| Grade, %                  | -      | 0    | -    | -      | 0     | -    | -      | 0     | -     | -      | 0     | -     |
| Peak Hour Factor          | 92     | 92   | 92   | 92     | 92    | 92   | 92     | 92    | 92    | 92     | 92    | 92    |
| Heavy Vehicles, %         | 2      | 2    | 2    | 2      | 2     | 2    | 2      | 2     | 2     | 2      | 2     | 2     |
| Mvmt Flow                 | 0      | 395  | 95   | 37     | 276   | 0    | 108    | 0     | 41    | 0      | 0     | 0     |
| Major/Minor               | Major1 |      |      | Major2 |       |      | Minor1 |       |       | Minor2 |       |       |
| Conflicting Flow All      | 276    | 0    | 0    | 489    | 0     | 0    | 792    | 792   | 442   | 745    | 839   | 276   |
| Stage 1                   | -      | -    | -    | -      | -     | -    | 442    | 442   | -     | 350    | 350   | -     |
| Stage 2                   | -      | -    | -    | -      | -     | -    | 350    | 350   | -     | 395    | 489   | -     |
| Critical Hdwy             | 4.12   | -    | -    | 4.12   | -     | -    | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1       | -      | -    | -    | -      | -     | -    | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2       | -      | -    | -    | -      | -     | -    | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy            | 2.218  | -    | -    | 2.218  | -     | -    | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver        | 1287   | -    | -    | 1074   | -     | -    | 307    | 322   | 616   | 330    | 302   | 763   |
| Stage 1                   | -      | -    | -    | -      | -     | -    | 595    | 576   | -     | 666    | 633   | -     |
| Stage 2                   | -      | -    | -    | -      | -     | -    | 666    | 633   | -     | 631    | 549   | -     |
| Platoon blocked, %        | -      | -    | -    | -      | -     | -    | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver        | 1287   | -    | -    | 1074   | -     | -    | 295    | 309   | 616   | 296    | 290   | 763   |
| Mov Cap-2 Maneuver        | -      | -    | -    | -      | -     | -    | 295    | 309   | -     | 296    | 290   | -     |
| Stage 1                   | -      | -    | -    | -      | -     | -    | 595    | 576   | -     | 639    | 607   | -     |
| Stage 2                   | -      | -    | -    | -      | -     | -    | 639    | 607   | -     | 588    | 549   | -     |
| Approach                  | EB     |      |      | WB     |       |      | NB     |       |       | SB     |       |       |
| HCM Control Delay, s/v    | 0      |      |      | 1      |       |      | 23.19  |       |       | 0      |       |       |
| HCM LOS                   |        |      |      |        |       |      | C      |       |       | A      |       |       |
| Minor Lane/Major Mvmt     | NBLn1  | EBL  | EBT  | EBR    | WBL   | WBT  | WBR    | SBLn1 |       |        |       |       |
| Capacity (veh/h)          | 344    | 1287 | -    | -      | 213   | -    | -      | -     |       |        |       |       |
| HCM Lane V/C Ratio        | 0.432  | -    | -    | -      | 0.034 | -    | -      | -     |       |        |       |       |
| HCM Control Delay (s/veh) | 23.2   | 0    | -    | -      | 8.5   | 0    | -      | 0     |       |        |       |       |
| HCM Lane LOS              | C      | A    | -    | -      | A     | A    | -      | A     |       |        |       |       |
| HCM 95th %tile Q(veh)     | 2.1    | 0    | -    | -      | 0.1   | -    | -      | -     |       |        |       |       |

# HCM 7th Signalized Intersection Capacity Analysis

## 6: 12th Ave & Hanford Armona Rd

PM 2026+Project  
07/16/2024

|                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                               |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |  |  |  |  |  |   |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (veh/h)        | 174                                                                               | 291                                                                               | 66                                                                                | 37                                                                                | 310                                                                               | 256                                                                               | 78                                                                                  | 320                                                                                 | 38                                                                                  | 334                                                                                 | 351                                                                                 | 235                                                                                 |
| Future Volume (veh/h)         | 174                                                                               | 291                                                                               | 66                                                                                | 37                                                                                | 310                                                                               | 256                                                                               | 78                                                                                  | 320                                                                                 | 38                                                                                  | 334                                                                                 | 351                                                                                 | 235                                                                                 |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         | No                                                                                |                                                                                   |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                                | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 189                                                                               | 316                                                                               | 72                                                                                | 40                                                                                | 337                                                                               | 278                                                                               | 85                                                                                  | 348                                                                                 | 41                                                                                  | 363                                                                                 | 382                                                                                 | 255                                                                                 |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |                                                                                     | Yes                                                                                 |
| Cap, veh/h                    | 242                                                                               | 605                                                                               | 472                                                                               | 75                                                                                | 414                                                                               | 323                                                                               | 132                                                                                 | 486                                                                                 | 57                                                                                  | 505                                                                                 | 777                                                                                 | 512                                                                                 |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Prop Arrive On Green          | 0.15                                                                              | 0.32                                                                              | 0.32                                                                              | 0.05                                                                              | 0.22                                                                              | 0.22                                                                              | 0.08                                                                                | 0.15                                                                                | 0.14                                                                                | 0.31                                                                                | 0.38                                                                                | 0.36                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 53.1                                                                              | 26.4                                                                              | 22.5                                                                              | 48.7                                                                              | 42.4                                                                              | 21.5                                                                              | 46.4                                                                                | 51.7                                                                                | 52.3                                                                                | 33.2                                                                                | 24.4                                                                                | 25.3                                                                                |
| Ln Grp LOS                    | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | D                                                                                 | C                                                                                 | D                                                                                   | D                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h           | 577                                                                               |                                                                                   |                                                                                   |                                                                                   | 655                                                                               |                                                                                   |                                                                                     |                                                                                     | 474                                                                                 |                                                                                     | 1000                                                                                |                                                                                     |
| Approach Delay, s/veh         | 34.7                                                                              |                                                                                   |                                                                                   |                                                                                   | 33.9                                                                              |                                                                                   |                                                                                     |                                                                                     | 51.0                                                                                |                                                                                     | 27.8                                                                                |                                                                                     |
| Approach LOS                  | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     | C                                                                                   |                                                                                     |
| Timer:                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 2                                                                                 | 1                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       | 4.0                                                                               | 2.0                                                                               | 2.0                                                                               | 3.0                                                                               | 2.0                                                                               | 4.0                                                                               | 2.0                                                                                 | 3.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 18.1                                                                              | 32.6                                                                              | 8.2                                                                               | 34.1                                                                              | 11.5                                                                              | 39.2                                                                              | 17.7                                                                                | 24.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | * 5.5                                                                             | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                                 | 5.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           | * 20                                                                              | 17.0                                                                              | 7.3                                                                               | 27.9                                                                              | 9.3                                                                               | 26.5                                                                              | 12.3                                                                                | 22.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    | 4.0                                                                               | 4.1                                                                               | 4.1                                                                               | 4.1                                                                               | 4.1                                                                               | 4.1                                                                               | 4.1                                                                                 | 4.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       | 11.7                                                                              | 20.3                                                                              | 4.2                                                                               | 14.8                                                                              | 6.7                                                                               | 15.6                                                                              | 12.3                                                                                | 17.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       | 0.9                                                                               | 0.0                                                                               | 0.0                                                                               | 1.1                                                                               | 0.0                                                                               | 1.9                                                                               | 0.0                                                                                 | 1.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        | 1.00                                                                              | 1.00                                                                              | 0.64                                                                              | 1.00                                                                              | 0.89                                                                              | 1.00                                                                              | 0.99                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         | 0.11                                                                              | 1.00                                                                              | 1.00                                                                              | 0.01                                                                              | 1.00                                                                              | 0.12                                                                              | 1.00                                                                                | 0.76                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 1                                                                                 | 3                                                                                 |                                                                                   |                                                                                   | 5                                                                                   | 7                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 1641                                                                              | 1641                                                                              |                                                                                   |                                                                                   | 1641                                                                                | 1641                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 3205                                                                              |                                                                                   |                                                                                   | 1870                                                                              |                                                                                   |                                                                                   | 2052                                                                                |                                                                                     |                                                                                     | 1870                                                                                |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 12                                                                                |                                                                                   |                                                                                   |                                                                                   | 14                                                                                |                                                                                   |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 375                                                                               |                                                                                   |                                                                                   |                                                                                   | 1460                                                                              |                                                                                   |                                                                                     |                                                                                     | 1352                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 1                                                                                 | 3                                                                                 | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 6: 12th Ave & Hanford Armona Rd

PM 2026+Project  
07/16/2024

| Lane Assignment                     | L (Prot) |      | L (Prot) |      | L (Prot) |      | L (Prot) |      |
|-------------------------------------|----------|------|----------|------|----------|------|----------|------|
| Lanes in Grp                        | 0        | 1    | 1        | 0    | 1        | 0    | 1        | 0    |
| Grp Vol (v), veh/h                  | 0        | 363  | 40       | 0    | 85       | 0    | 189      | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0        | 1641 | 1641     | 0    | 1641     | 0    | 1641     | 0    |
| Q Serve Time (g_s), s               | 0.0      | 18.3 | 2.2      | 0.0  | 4.7      | 0.0  | 10.3     | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0      | 18.3 | 2.2      | 0.0  | 4.7      | 0.0  | 10.3     | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0        | 0    | 0        | 0    | 0        | 0    | 0        | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0        | 0    | 0        | 0    | 0        | 0    | 0        | 0    |
| Perm LT Eff Green (g_p), s          | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Time to First Blk (g_f), s          | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00     | 1.00 | 1.00     | 0.00 | 1.00     | 0.00 | 1.00     | 0.00 |
| Lane Grp Cap (c), veh/h             | 0        | 505  | 75       | 0    | 132      | 0    | 242      | 0    |
| V/C Ratio (X)                       | 0.00     | 0.72 | 0.54     | 0.00 | 0.65     | 0.00 | 0.78     | 0.00 |
| Avail Cap (c_a), veh/h              | 0        | 505  | 155      | 0    | 191      | 0    | 243      | 0    |
| Upstream Filter (I)                 | 0.00     | 0.92 | 0.90     | 0.00 | 0.95     | 0.00 | 1.00     | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0      | 28.6 | 43.4     | 0.0  | 41.5     | 0.0  | 38.2     | 0.0  |
| Incr Delay (d2), s/veh              | 0.0      | 4.5  | 5.3      | 0.0  | 4.9      | 0.0  | 14.9     | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Control Delay (d), s/veh            | 0.0      | 33.2 | 48.7     | 0.0  | 46.4     | 0.0  | 53.1     | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0      | 6.5  | 0.8      | 0.0  | 1.8      | 0.0  | 3.8      | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0      | 0.6  | 0.1      | 0.0  | 0.2      | 0.0  | 1.0      | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00     | 1.00 | 1.00     | 0.00 | 1.00     | 0.00 | 1.00     | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0      | 7.1  | 1.0      | 0.0  | 1.9      | 0.0  | 4.8      | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00     | 0.90 | 0.49     | 0.00 | 0.25     | 0.00 | 0.82     | 0.00 |
| Initial Q (Qb), veh                 | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Sat Delay (ds), s/veh               | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Sat Q (Qs), veh                     | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Sat Cap (cs), veh/h                 | 0        | 0    | 0        | 0    | 0        | 0    | 0        | 0    |
| Initial Q Clear Time (tc), h        | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 2    | 0    | 0    | 4    | 0    | 6    | 0    | 8    |
| Lane Assignment             | T    |      |      | T    |      | T    |      | T    |
| Lanes in Grp                | 1    | 0    | 0    | 1    | 0    | 1    | 0    | 1    |
| Grp Vol (v), veh/h          | 192  | 0    | 0    | 316  | 0    | 330  | 0    | 337  |
| Grp Sat Flow (s), veh/h/ln  | 1777 | 0    | 0    | 1870 | 0    | 1777 | 0    | 1870 |
| Q Serve Time (g_s), s       | 9.5  | 0.0  | 0.0  | 12.8 | 0.0  | 13.2 | 0.0  | 15.9 |
| Cycle Q Clear Time (g_c), s | 9.5  | 0.0  | 0.0  | 12.8 | 0.0  | 13.2 | 0.0  | 15.9 |
| Lane Grp Cap (c), veh/h     | 269  | 0    | 0    | 605  | 0    | 673  | 0    | 414  |
| V/C Ratio (X)               | 0.71 | 0.00 | 0.00 | 0.52 | 0.00 | 0.49 | 0.00 | 0.81 |
| Avail Cap (c_a), veh/h      | 417  | 0    | 0    | 605  | 0    | 673  | 0    | 491  |
| Upstream Filter (I)         | 0.95 | 0.00 | 0.00 | 1.00 | 0.00 | 0.92 | 0.00 | 0.90 |
| Uniform Delay (d1), s/veh   | 37.5 | 0.0  | 0.0  | 25.6 | 0.0  | 22.0 | 0.0  | 34.4 |
| Incr Delay (d2), s/veh      | 14.2 | 0.0  | 0.0  | 0.8  | 0.0  | 2.3  | 0.0  | 8.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 51.7 | 0.0  | 0.0  | 26.4 | 0.0  | 24.4 | 0.0  | 42.4 |
| 1st-Term Q (Q1), veh/ln     | 3.9  | 0.0  | 0.0  | 5.1  | 0.0  | 4.9  | 0.0  | 6.6  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 6: 12th Ave & Hanford Armona Rd

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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 1.1  | 0.0  | 0.0  | 0.1  | 0.0  | 0.4  | 0.0  | 0.9  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln | 4.9  | 0.0  | 0.0  | 5.3  | 0.0  | 5.3  | 0.0  | 7.5  |
| %ile Storage Ratio (RQ%)     | 0.04 | 0.00 | 0.00 | 0.03 | 0.00 | 0.09 | 0.00 | 0.04 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 12   | 0    | 0    | 14   | 0    | 16   | 0    | 18   |
| Lane Assignment                  | T+R  |      |      | R    |      | T+R  |      | R    |
| Lanes in Grp                     | 1    | 0    | 0    | 1    | 0    | 1    | 0    | 1    |
| Grp Vol (v), veh/h               | 197  | 0    | 0    | 72   | 0    | 307  | 0    | 278  |
| Grp Sat Flow (s), veh/h/ln       | 1803 | 0    | 0    | 1460 | 0    | 1627 | 0    | 1460 |
| Q Serve Time (g_s), s            | 9.7  | 0.0  | 0.0  | 3.3  | 0.0  | 13.6 | 0.0  | 7.7  |
| Cycle Q Clear Time (g_c), s      | 9.7  | 0.0  | 0.0  | 3.3  | 0.0  | 13.6 | 0.0  | 7.7  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.21 | 0.00 | 0.00 | 1.00 | 0.00 | 0.83 | 0.00 | 1.00 |
| Lane Grp Cap (c), veh/h          | 273  | 0    | 0    | 472  | 0    | 616  | 0    | 323  |
| V/C Ratio (X)                    | 0.72 | 0.00 | 0.00 | 0.15 | 0.00 | 0.50 | 0.00 | 0.86 |
| Avail Cap (c_a), veh/h           | 423  | 0    | 0    | 472  | 0    | 616  | 0    | 383  |
| Upstream Filter (I)              | 0.95 | 0.00 | 0.00 | 1.00 | 0.00 | 0.92 | 0.00 | 0.90 |
| Uniform Delay (d1), s/veh        | 37.7 | 0.0  | 0.0  | 22.4 | 0.0  | 22.6 | 0.0  | 7.2  |
| Incr Delay (d2), s/veh           | 14.5 | 0.0  | 0.0  | 0.1  | 0.0  | 2.6  | 0.0  | 14.4 |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 52.3 | 0.0  | 0.0  | 22.5 | 0.0  | 25.3 | 0.0  | 21.5 |
| 1st-Term Q (Q1), veh/ln          | 4.0  | 0.0  | 0.0  | 1.0  | 0.0  | 4.7  | 0.0  | 4.8  |
| 2nd-Term Q (Q2), veh/ln          | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.5  | 0.0  | 1.3  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln     | 5.1  | 0.0  | 0.0  | 1.0  | 0.0  | 5.1  | 0.0  | 6.1  |
| %ile Storage Ratio (RQ%)         | 0.05 | 0.00 | 0.00 | 0.26 | 0.00 | 0.09 | 0.00 | 3.10 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 34.8 |
| HCM 7th LOS                  | C    |

## Notes

\* HCM 7th Edition computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 7th Signalized Intersection Capacity Analysis

## 7: 11th Ave & Hanford Armona Rd

PM 2026+Project  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |  |  |  |  |                                                                                   |   |  |  |  |  |  |
| Traffic Volume (veh/h)        | 196                                                                               | 265                                                                               | 52                                                                                | 85                                                                                | 276                                                                               | 94                                                                                | 83                                                                                  | 371                                                                                 | 78                                                                                  | 116                                                                                 | 345                                                                                 | 267                                                                                 |
| Future Volume (veh/h)         | 196                                                                               | 265                                                                               | 52                                                                                | 85                                                                                | 276                                                                               | 94                                                                                | 83                                                                                  | 371                                                                                 | 78                                                                                  | 116                                                                                 | 345                                                                                 | 267                                                                                 |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                                | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 213                                                                               | 288                                                                               | 57                                                                                | 92                                                                                | 300                                                                               | 102                                                                               | 90                                                                                  | 403                                                                                 | 85                                                                                  | 126                                                                                 | 375                                                                                 | 290                                                                                 |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Cap, veh/h                    | 397                                                                               | 871                                                                               | 680                                                                               | 469                                                                               | 621                                                                               | 211                                                                               | 298                                                                                 | 756                                                                                 | 590                                                                                 | 318                                                                                 | 756                                                                                 | 590                                                                                 |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Prop Arrive On Green          | 0.47                                                                              | 0.47                                                                              | 0.47                                                                              | 0.47                                                                              | 0.47                                                                              | 0.44                                                                              | 0.40                                                                                | 0.40                                                                                | 0.40                                                                                | 0.40                                                                                | 0.40                                                                                | 0.40                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 20.3                                                                              | 10.6                                                                              | 9.2                                                                               | 13.8                                                                              | 0.0                                                                               | 11.9                                                                              | 20.1                                                                                | 14.5                                                                                | 11.7                                                                                | 21.7                                                                                | 14.1                                                                                | 14.2                                                                                |
| Ln Grp LOS                    | C                                                                                 | B                                                                                 | A                                                                                 | B                                                                                 |                                                                                   | B                                                                                 | C                                                                                   | B                                                                                   | B                                                                                   | C                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h           |                                                                                   | 558                                                                               |                                                                                   |                                                                                   | 494                                                                               |                                                                                   |                                                                                     | 578                                                                                 |                                                                                     |                                                                                     | 791                                                                                 |                                                                                     |
| Approach Delay, s/veh         |                                                                                   | 14.1                                                                              |                                                                                   |                                                                                   | 12.3                                                                              |                                                                                   |                                                                                     | 14.9                                                                                |                                                                                     |                                                                                     | 15.4                                                                                |                                                                                     |
| Approach LOS                  |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer:                        |                                                                                   | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                   | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                   |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Case No                       |                                                                                   | 5.0                                                                               |                                                                                   |                                                                                   | 5.0                                                                               |                                                                                   | 5.0                                                                                 |                                                                                     | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      |                                                                                   | 28.8                                                                              |                                                                                   |                                                                                   | 32.6                                                                              |                                                                                   | 28.8                                                                                |                                                                                     | 32.6                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                   | 5.5                                                                               |                                                                                   | 5.5                                                                                 |                                                                                     | 5.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           |                                                                                   | 34.5                                                                              |                                                                                   |                                                                                   | 44.5                                                                              |                                                                                   | 34.5                                                                                |                                                                                     | 44.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    |                                                                                   | 4.4                                                                               |                                                                                   |                                                                                   | 4.6                                                                               |                                                                                   | 4.4                                                                                 |                                                                                     | 4.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       |                                                                                   | 17.8                                                                              |                                                                                   |                                                                                   | 24.7                                                                              |                                                                                   | 20.3                                                                                |                                                                                     | 12.1                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       |                                                                                   | 2.3                                                                               |                                                                                   |                                                                                   | 2.5                                                                               |                                                                                   | 3.0                                                                                 |                                                                                     | 2.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         |                                                                                   | 0.02                                                                              |                                                                                   |                                                                                   | 0.01                                                                              |                                                                                   | 0.11                                                                                |                                                                                     | 0.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   | 7                                                                                 |                                                                                   | 1                                                                                   |                                                                                     | 3                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 710                                                                               |                                                                                   |                                                                                   | 905                                                                               |                                                                                   | 836                                                                                 |                                                                                     | 954                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                   |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 1870                                                                              |                                                                                   |                                                                                   | 1870                                                                              |                                                                                   | 1870                                                                                |                                                                                     | 1335                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 12                                                                                |                                                                                   |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                  |                                                                                     | 18                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 1460                                                                              |                                                                                   |                                                                                   | 1460                                                                              |                                                                                   | 1460                                                                                |                                                                                     | 454                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                   | 0                                                                                   | 3                                                                                   |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 7: 11th Ave & Hanford Armona Rd

PM 2026+Project  
07/16/2024

|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     |      | L    |      | L    |      | L    |      | L    |
| Lanes in Grp                        | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 1    |
| Grp Vol (v), veh/h                  | 0    | 90   | 0    | 213  | 0    | 126  | 0    | 92   |
| Grp Sat Flow (s), veh/h/ln          | 0    | 710  | 0    | 905  | 0    | 836  | 0    | 954  |
| Q Serve Time (g_s), s               | 0.0  | 6.6  | 0.0  | 13.1 | 0.0  | 8.3  | 0.0  | 4.1  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 15.8 | 0.0  | 22.7 | 0.0  | 18.3 | 0.0  | 10.1 |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 710  | 0    | 905  | 0    | 836  | 0    | 954  |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 24.8 | 0.0  | 28.6 | 0.0  | 24.8 | 0.0  | 28.6 |
| Perm LT Serve Time (g_u), s         | 0.0  | 15.7 | 0.0  | 19.0 | 0.0  | 14.8 | 0.0  | 22.6 |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 6.6  | 0.0  | 13.1 | 0.0  | 8.3  | 0.0  | 4.1  |
| Time to First Blk (g_f), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Lane Grp Cap (c), veh/h             | 0    | 298  | 0    | 397  | 0    | 318  | 0    | 469  |
| V/C Ratio (X)                       | 0.00 | 0.30 | 0.00 | 0.54 | 0.00 | 0.40 | 0.00 | 0.20 |
| Avail Cap (c_a), veh/h              | 0    | 427  | 0    | 653  | 0    | 470  | 0    | 738  |
| Upstream Filter (I)                 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 19.5 | 0.0  | 19.2 | 0.0  | 20.9 | 0.0  | 13.6 |
| Incr Delay (d2), s/veh              | 0.0  | 0.6  | 0.0  | 1.1  | 0.0  | 0.8  | 0.0  | 0.2  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 20.1 | 0.0  | 20.3 | 0.0  | 21.7 | 0.0  | 13.8 |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.9  | 0.0  | 2.2  | 0.0  | 1.3  | 0.0  | 0.7  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.9  | 0.0  | 2.3  | 0.0  | 1.4  | 0.0  | 0.7  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.22 | 0.00 | 0.58 | 0.00 | 0.51 | 0.00 | 0.18 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 8    |
| Lane Assignment             |      | T    |      | T    |      | T    |      |      |
| Lanes in Grp                | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 403  | 0    | 288  | 0    | 375  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1870 | 0    | 1870 | 0    | 1870 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 10.1 | 0.0  | 6.0  | 0.0  | 9.2  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 10.1 | 0.0  | 6.0  | 0.0  | 9.2  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 756  | 0    | 871  | 0    | 756  | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.53 | 0.00 | 0.33 | 0.00 | 0.50 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 1096 | 0    | 1400 | 0    | 1096 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 13.9 | 0.0  | 10.4 | 0.0  | 13.6 | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.6  | 0.0  | 0.2  | 0.0  | 0.5  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 14.5 | 0.0  | 10.6 | 0.0  | 14.1 | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 3.2  | 0.0  | 1.7  | 0.0  | 2.9  | 0.0  | 0.0  |

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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.1  | 0.0  | 0.1  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 3.3  | 0.0  | 1.8  | 0.0  | 3.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.05 | 0.00 | 0.01 | 0.00 | 0.03 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 18   |
| Lane Assignment                  |      | R    |      | R    |      | R    |      | T+R  |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 1    |
| Grp Vol (v), veh/h               | 0    | 85   | 0    | 57   | 0    | 290  | 0    | 402  |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1460 | 0    | 1460 | 0    | 1460 | 0    | 1789 |
| Q Serve Time (g_s), s            | 0.0  | 2.3  | 0.0  | 1.3  | 0.0  | 9.1  | 0.0  | 9.6  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 2.3  | 0.0  | 1.3  | 0.0  | 9.1  | 0.0  | 9.6  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.25 |
| Lane Grp Cap (c), veh/h          | 0    | 590  | 0    | 680  | 0    | 590  | 0    | 833  |
| V/C Ratio (X)                    | 0.00 | 0.14 | 0.00 | 0.08 | 0.00 | 0.49 | 0.00 | 0.48 |
| Avail Cap (c_a), veh/h           | 0    | 855  | 0    | 1093 | 0    | 855  | 0    | 1339 |
| Upstream Filter (I)              | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 11.6 | 0.0  | 9.1  | 0.0  | 13.6 | 0.0  | 11.5 |
| Incr Delay (d2), s/veh           | 0.0  | 0.1  | 0.0  | 0.1  | 0.0  | 0.6  | 0.0  | 0.4  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 11.7 | 0.0  | 9.2  | 0.0  | 14.2 | 0.0  | 11.9 |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.6  | 0.0  | 0.3  | 0.0  | 2.2  | 0.0  | 2.7  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.1  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.6  | 0.0  | 0.3  | 0.0  | 2.3  | 0.0  | 2.8  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.15 | 0.00 | 0.16 | 0.00 | 0.30 | 0.00 | 0.01 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 14.4 |
| HCM 7th LOS                  | B    |



# HCM 7th Signalized Intersection Capacity Analysis

## 8: 12th Ave & Hume Ave

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|                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|---|---|---|
|                               |  |  |  |  |  |  |      |   |   |   |
| Movement                      | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |      |   |   |   |
| Lane Configurations           |  |  |  |                                                                                   |  |  |      |   |   |   |
| Traffic Volume (veh/h)        | 9                                                                                 | 142                                                                               | 172                                                                               | 19                                                                                | 193                                                                               | 175                                                                               |      |   |   |   |
| Future Volume (veh/h)         | 9                                                                                 | 142                                                                               | 172                                                                               | 19                                                                                | 193                                                                               | 175                                                                               |      |   |   |   |
| Number                        | 3                                                                                 | 18                                                                                | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 |      |   |   |   |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |      |   |   |   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |   |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |      |   |   |   |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |   |
| Work Zone On Approach         | No                                                                                |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |      |   |   |   |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              |      |   |   |   |
| Adj Flow Rate, veh/h          | 10                                                                                | 154                                                                               | 187                                                                               | 21                                                                                | 210                                                                               | 190                                                                               |      |   |   |   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |      |   |   |   |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |      |   |   |   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |      |   |   |   |
| Cap, veh/h                    | 207                                                                               | 184                                                                               | 1316                                                                              | 148                                                                               | 903                                                                               | 1490                                                                              |      |   |   |   |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |   |
| Prop Arrive On Green          | 0.13                                                                              | 0.13                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              |      |   |   |   |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Ln Grp Delay, s/veh           | 40.0                                                                              | 53.9                                                                              | 0.0                                                                               | 2.6                                                                               | 3.9                                                                               | 2.5                                                                               |      |   |   |   |
| Ln Grp LOS                    | D                                                                                 | D                                                                                 |                                                                                   | A                                                                                 | A                                                                                 | A                                                                                 |      |   |   |   |
| Approach Vol, veh/h           | 164                                                                               |                                                                                   | 208                                                                               |                                                                                   |                                                                                   | 400                                                                               |      |   |   |   |
| Approach Delay, s/veh         | 53.1                                                                              |                                                                                   | 2.6                                                                               |                                                                                   |                                                                                   | 3.3                                                                               |      |   |   |   |
| Approach LOS                  | D                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |      |   |   |   |
| Timer:                        |                                                                                   | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6    | 7 | 8 |   |
| Assigned Phs                  |                                                                                   |                                                                                   | 2                                                                                 | 8                                                                                 |                                                                                   |                                                                                   | 6    |   |   |   |
| Case No                       |                                                                                   |                                                                                   | 8.0                                                                               | 9.0                                                                               |                                                                                   |                                                                                   | 6.0  |   |   |   |
| Phs Duration (G+Y+Rc), s      |                                                                                   |                                                                                   | 86.9                                                                              | 17.1                                                                              |                                                                                   |                                                                                   | 86.9 |   |   |   |
| Change Period (Y+Rc), s       |                                                                                   |                                                                                   | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                   | 4.0  |   |   |   |
| Max Green (Gmax), s           |                                                                                   |                                                                                   | 64.0                                                                              | 32.0                                                                              |                                                                                   |                                                                                   | 64.0 |   |   |   |
| Max Allow Headway (MAH), s    |                                                                                   |                                                                                   | 4.0                                                                               | 4.3                                                                               |                                                                                   |                                                                                   | 4.4  |   |   |   |
| Max Q Clear (g_c+I1), s       |                                                                                   |                                                                                   | 4.7                                                                               | 12.7                                                                              |                                                                                   |                                                                                   | 10.4 |   |   |   |
| Green Ext Time (g_e), s       |                                                                                   |                                                                                   | 0.7                                                                               | 0.5                                                                               |                                                                                   |                                                                                   | 1.7  |   |   |   |
| Prob of Phs Call (p_c)        |                                                                                   |                                                                                   | 1.00                                                                              | 0.99                                                                              |                                                                                   |                                                                                   | 1.00 |   |   |   |
| Prob of Max Out (p_x)         |                                                                                   |                                                                                   | 0.00                                                                              | 0.00                                                                              |                                                                                   |                                                                                   | 0.00 |   |   |   |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 5                                                                                 | 3                                                                                 |                                                                                   |                                                                                   | 1    |   |   |   |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 0                                                                                 | 1641                                                                              |                                                                                   |                                                                                   | 1081 |   |   |   |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 2                                                                                 | 8                                                                                 |                                                                                   |                                                                                   | 6    |   |   |   |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 1652                                                                              | 0                                                                                 |                                                                                   |                                                                                   | 1870 |   |   |   |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 12                                                                                | 18                                                                                |                                                                                   |                                                                                   | 16   |   |   |   |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 185                                                                               | 1460                                                                              |                                                                                   |                                                                                   | 0    |   |   |   |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 0                                                                                 | 5                                                                                 | 3                                                                                 | 0                                                                                 | 0    | 1 | 0 | 0 |

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|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     |      |      | L    |      |      | L    |      |      |
| Lanes in Grp                        | 0    | 0    | 1    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 10   | 0    | 0    | 210  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 1641 | 0    | 0    | 1081 | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.6  | 0.0  | 0.0  | 5.7  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.6  | 0.0  | 0.0  | 8.4  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 1641 | 0    | 0    | 1081 | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 82.9 | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 80.2 | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 5.7  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 82.9 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 207  | 0    | 0    | 903  | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 | 0.23 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 505  | 0    | 0    | 903  | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.90 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 39.9 | 0.0  | 0.0  | 3.4  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  | 0.5  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 40.0 | 0.0  | 0.0  | 3.9  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  | 0.7  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  | 0.8  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 | 0.10 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 8    | 0    | 0    | 6    | 0    | 0    |
| Lane Assignment             | T    |      |      |      |      |      |      |      |
| Lanes in Grp                | 0    | 0    | 0    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 0    | 0    | 0    | 0    | 190  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 0    | 0    | 0    | 0    | 1870 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 2.4  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 2.4  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 0    | 0    | 0    | 0    | 1490 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.13 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 0    | 0    | 0    | 0    | 1490 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.90 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 2.4  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 2.5  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.4  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 8: 12th Ave & Hume Ave

PM 2026+Project  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.5  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 18   | 0    | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      |      |      |      |      |
| Lanes in Grp                     | 0    | 1    | 1    | 0    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 208  | 154  | 0    | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1837 | 1460 | 0    | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 2.7  | 10.7 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 2.7  | 10.7 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.10 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1464 | 184  | 0    | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.14 | 0.84 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1464 | 449  | 0    | 0    | 0    | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 2.4  | 44.4 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.2  | 9.5  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 2.6  | 53.9 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.4  | 3.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.1  | 0.5  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.5  | 4.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.01 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 13.7 |
| HCM 7th LOS                  | B    |



# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

PM 2044  
07/16/2024

| Movement                      | EBL | EBT  | EBR  | WBL  | WBT   | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|-------------------------------|-----|------|------|------|-------|------|------|------|------|------|------|------|
| Lane Configurations           |     |      |      | ↰↰   |       | ↰↰   | ↰    | ↰↰   |      |      | ↰↰↰  | ↰    |
| Traffic Volume (veh/h)        | 0   | 0    | 0    | 240  | 0     | 636  | 44   | 1473 | 0    | 0    | 1741 | 817  |
| Future Volume (veh/h)         | 0   | 0    | 0    | 240  | 0     | 636  | 44   | 1473 | 0    | 0    | 1741 | 817  |
| Number                        |     |      |      | 3    | 8     | 18   | 5    | 2    | 12   | 1    | 6    | 16   |
| Initial Q, veh                |     |      |      | 0    | 0     | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Lane Width Adj.               |     |      |      | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped-Bike Adj (A_pbT)          |     |      |      | 1.00 |       | 1.00 | 1.00 |      | 1.00 | 1.00 |      | 1.00 |
| Parking Bus Adj               |     |      |      | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach         |     |      |      | No   |       |      |      | No   |      |      |      | No   |
| Lanes Open During Work Zone   |     |      |      |      |       |      |      |      |      |      |      |      |
| Adj Sat Flow, veh/h/ln        |     |      |      | 1723 | 0     | 1723 | 1723 | 1870 | 0    | 0    | 1870 | 1723 |
| Adj Flow Rate, veh/h          |     |      |      | 261  | 0     | 691  | 48   | 1601 | 0    | 0    | 1892 | 888  |
| Peak Hour Factor              |     |      |      | 0.92 | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, %          |     |      |      | 2    | 0     | 2    | 2    | 2    | 0    | 0    | 2    | 2    |
| Opposing Right Turn Influence |     |      |      | Yes  |       |      | Yes  |      |      | No   |      |      |
| Cap, veh/h                    |     |      |      | 916  | 0     | 739  | 63   | 2266 | 0    | 0    | 2794 | 799  |
| HCM Platoon Ratio             |     |      |      | 1.00 | 1.00  | 1.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Prop Arrive On Green          |     |      |      | 0.29 | 0.00  | 0.29 | 0.08 | 1.00 | 0.00 | 0.00 | 0.55 | 0.55 |
| Unsig. Movement Delay         |     |      |      |      |       |      |      |      |      |      |      |      |
| Ln Grp Delay, s/veh           |     |      |      | 29.5 | 0.0   | 55.3 | 70.4 | 1.4  | 0.0  | 0.0  | 18.6 | 91.0 |
| Ln Grp LOS                    |     |      |      | C    |       | E    | E    | A    |      |      | B    | F    |
| Approach Vol, veh/h           |     |      |      | 952  |       |      |      | 1649 |      |      |      | 2780 |
| Approach Delay, s/veh         |     |      |      | 48.2 |       |      |      | 3.4  |      |      |      | 41.7 |
| Approach LOS                  |     |      |      | D    |       |      |      | A    |      |      |      | D    |
| Timer:                        | 1   | 2    | 3    | 4    | 5     | 6    | 7    | 8    |      |      |      |      |
| Assigned Phs                  |     | 2    | 8    |      | 6     | 5    |      |      |      |      |      |      |
| Case No                       |     | 4.0  | 9.0  |      | 7.0   | 2.0  |      |      |      |      |      |      |
| Phs Duration (G+Y+Rc), s      |     | 71.6 | 34.4 |      | 62.0  | 9.6  |      |      |      |      |      |      |
| Change Period (Y+Rc), s       |     | 5.5  | 4.0  |      | * 5.5 | 5.5  |      |      |      |      |      |      |
| Max Green (Gmax), s           |     | 65.5 | 31.0 |      | * 57  | 5.0  |      |      |      |      |      |      |
| Max Allow Headway (MAH), s    |     | 4.0  | 4.3  |      | 4.1   | 4.1  |      |      |      |      |      |      |
| Max Q Clear (g_c+I1), s       |     | 2.0  | 29.8 |      | 60.0  | 5.0  |      |      |      |      |      |      |
| Green Ext Time (g_e), s       |     | 10.7 | 0.6  |      | 0.0   | 0.0  |      |      |      |      |      |      |
| Prob of Phs Call (p_c)        |     | 1.00 | 1.00 |      | 1.00  | 0.76 |      |      |      |      |      |      |
| Prob of Max Out (p_x)         |     | 0.00 | 1.00 |      | 1.00  | 1.00 |      |      |      |      |      |      |
| Left-Turn Movement Data       |     |      |      |      |       |      |      |      |      |      |      |      |
| Assigned Mvmt                 |     |      |      | 3    |       | 1    | 5    |      |      |      |      |      |
| Mvmt Sat Flow, veh/h          |     |      |      | 3183 |       | 0    | 1641 |      |      |      |      |      |
| Through Movement Data         |     |      |      |      |       |      |      |      |      |      |      |      |
| Assigned Mvmt                 |     | 2    | 8    |      | 6     |      |      |      |      |      |      |      |
| Mvmt Sat Flow, veh/h          |     | 3647 | 0    |      | 5274  |      |      |      |      |      |      |      |
| Right-Turn Movement Data      |     |      |      |      |       |      |      |      |      |      |      |      |
| Assigned Mvmt                 |     | 12   | 18   |      | 16    |      |      |      |      |      |      |      |
| Mvmt Sat Flow, veh/h          |     | 0    | 2569 |      | 1460  |      |      |      |      |      |      |      |
| Left Lane Group Data          |     |      |      |      |       |      |      |      |      |      |      |      |
| Assigned Mvmt                 | 0   | 0    | 3    | 0    | 1     | 5    | 0    | 0    |      |      |      |      |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

PM 2044  
07/16/2024

| Lane Assignment                     | L    |      |      |      | L (Prot) |      |      |      |
|-------------------------------------|------|------|------|------|----------|------|------|------|
| Lanes in Grp                        | 0    | 0    | 2    | 0    | 0        | 1    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 261  | 0    | 0        | 48   | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 1591 | 0    | 0        | 1641 | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 6.7  | 0.0  | 0.0      | 3.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 6.7  | 0.0  | 0.0      | 3.0  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 1591 | 0    | 0        | 0    | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0        | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 0.0  | 0.0  | 0.0  | 58.0     | 0.0  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 1.00 | 0.00 | 0.00     | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 916  | 0    | 0        | 63   | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.28 | 0.00 | 0.00     | 0.76 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 934  | 0    | 0        | 77   | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00     | 0.74 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 29.3 | 0.0  | 0.0      | 48.4 | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.2  | 0.0  | 0.0      | 21.9 | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 29.5 | 0.0  | 0.0      | 70.4 | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 2.4  | 0.0  | 0.0      | 1.2  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.4  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 0.00 | 1.00 | 0.00 | 1.00     | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 2.4  | 0.0  | 0.0      | 1.5  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.23 | 0.00 | 0.00     | 0.10 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0        | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 8    | 0    | 6    | 0    | 0    | 0    |
| Lane Assignment             | T    |      |      |      | T    |      |      |      |
| Lanes in Grp                | 0    | 2    | 0    | 0    | 3    | 0    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 1601 | 0    | 0    | 1892 | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1777 | 0    | 0    | 1702 | 0    | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 28.3 | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 28.3 | 0.0  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 2266 | 0    | 0    | 2794 | 0    | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.71 | 0.00 | 0.00 | 0.68 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 2266 | 0    | 0    | 2794 | 0    | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.74 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 17.3 | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 1.4  | 0.0  | 0.0  | 1.3  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 1.4  | 0.0  | 0.0  | 18.6 | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 9.3  | 0.0  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.4  | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.4  | 0.0  | 0.0  | 9.7  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.02 | 0.00 | 0.00 | 0.07 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 18   | 0    | 16   | 0    | 0    | 0    |
| Lane Assignment                  |      |      | R    |      | R    |      |      |      |
| Lanes in Grp                     | 0    | 0    | 2    | 0    | 1    | 0    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 0    | 691  | 0    | 888  | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 0    | 1285 | 0    | 1460 | 0    | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 0.0  | 27.8 | 0.0  | 58.0 | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 0.0  | 27.8 | 0.0  | 58.0 | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 0    | 739  | 0    | 799  | 0    | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.00 | 0.93 | 0.00 | 1.11 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 0    | 754  | 0    | 799  | 0    | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 0.0  | 36.8 | 0.0  | 24.0 | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.0  | 18.6 | 0.0  | 67.0 | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 0.0  | 55.3 | 0.0  | 91.0 | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.0  | 8.0  | 0.0  | 16.5 | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.0  | 1.9  | 0.0  | 14.9 | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.0  | 9.9  | 0.0  | 31.3 | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.00 | 0.61 | 0.00 | 6.37 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 22.3 | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  | 0.0  |

### Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 31.1 |
| HCM 7th LOS                  | C    |

### Notes

\* HCM 7th Edition computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 7th Signalized Intersection Capacity Analysis

## 2: 12th Ave & SR 198 WB EB Ramps

PM 2044  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |  |                                                                                     |                                                                                     |  |  |
| Traffic Volume (veh/h)        | 613                                                                               | 0                                                                                 | 48                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 934                                                                                 | 194                                                                                 | 0                                                                                   | 1258                                                                                | 0                                                                                   |
| Future Volume (veh/h)         | 613                                                                               | 0                                                                                 | 48                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 934                                                                                 | 194                                                                                 | 0                                                                                   | 1258                                                                                | 0                                                                                   |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                |                                                                                   |                                                                                   |                                                                                   | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 0                                                                                 | 1723                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1870                                                                                | 1723                                                                                | 0                                                                                   | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 666                                                                               | 0                                                                                 | 52                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1015                                                                                | 211                                                                                 | 0                                                                                   | 1367                                                                                | 0                                                                                   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 0                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Cap, veh/h                    | 771                                                                               | 0                                                                                 | 354                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2002                                                                                | 415                                                                                 | 0                                                                                   | 2428                                                                                | 998                                                                                 |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 2.00                                                                                | 2.00                                                                                |
| Prop Arrive On Green          | 0.24                                                                              | 0.00                                                                              | 0.24                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 0.68                                                                                | 0.67                                                                                | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 45.0                                                                              | 0.0                                                                               | 31.7                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 8.7                                                                                 | 8.9                                                                                 | 0.0                                                                                 | 0.7                                                                                 | 0.0                                                                                 |
| Ln Grp LOS                    | D                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     | A                                                                                   | A                                                                                   |                                                                                     | A                                                                                   |                                                                                     |
| Approach Vol, veh/h           | 718                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 1226                                                                                |                                                                                     |                                                                                     | 1367                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh         | 44.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 8.8                                                                                 |                                                                                     |                                                                                     | 0.7                                                                                 |                                                                                     |                                                                                     |
| Approach LOS                  | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Timer:                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                               | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       | 8.0                                                                               |                                                                                   | 9.0                                                                               |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 76.4                                                                              |                                                                                   | 29.6                                                                              |                                                                                   | 76.4                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | 5.5                                                                               |                                                                                   | 4.0                                                                               |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           | 63.5                                                                              |                                                                                   | 33.0                                                                              |                                                                                   | 63.5                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    | 4.1                                                                               |                                                                                   | 4.1                                                                               |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       | 20.1                                                                              |                                                                                   | 23.3                                                                              |                                                                                   | 2.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       | 5.7                                                                               |                                                                                   | 2.3                                                                               |                                                                                   | 8.1                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         | 0.00                                                                              |                                                                                   | 0.18                                                                              |                                                                                   | 0.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 5                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 1                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 0                                                                                 |                                                                                   | 3183                                                                              |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 3024                                                                              |                                                                                   | 0                                                                                 |                                                                                   | 3647                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 12                                                                                |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 608                                                                               |                                                                                   | 1460                                                                              |                                                                                   | 1460                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report



# HCM 7th Signalized Intersection Capacity Analysis

## 2: 12th Ave & SR 198 WB EB Ramps

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07/16/2024

|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     | L    |      |      |      |      |      |      |      |
| Lanes in Grp                        | 0    | 0    | 0    | 2    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 0    | 666  | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 0    | 1591 | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.0  | 21.3 | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.0  | 21.3 | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 0    | 1591 | 0    | 0    | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 72.4 | 0.0  | 0.0  | 0.0  | 72.4 | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 0    | 771  | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.00 | 0.86 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 0    | 994  | 0    | 0    | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 0.0  | 38.5 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.0  | 6.5  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 0.0  | 45.0 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.0  | 7.7  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.0  | 8.4  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.00 | 0.42 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 0    |
| Lane Assignment             | T    |      |      |      | T    |      |      |      |
| Lanes in Grp                | 0    | 1    | 0    | 0    | 0    | 2    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 615  | 0    | 0    | 0    | 1367 | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1777 | 0    | 0    | 0    | 1777 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 17.8 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 17.8 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 1214 | 0    | 0    | 0    | 2428 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.51 | 0.00 | 0.00 | 0.00 | 0.56 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 1214 | 0    | 0    | 0    | 2428 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.41 | 0.00 | 0.00 | 0.00 | 0.77 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 8.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.6  | 0.0  | 0.0  | 0.0  | 0.7  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 8.7  | 0.0  | 0.0  | 0.0  | 0.7  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 5.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

## HCM 7th Signalized Intersection Capacity Analysis

### 2: 12th Ave & SR 198 WB EB Ramps

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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 5.2  | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.09 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

#### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      | R    |      |      |      |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 611  | 0    | 52   | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1761 | 0    | 1460 | 0    | 1460 | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 18.1 | 0.0  | 3.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 18.1 | 0.0  | 3.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.35 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1203 | 0    | 354  | 0    | 998  | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.51 | 0.00 | 0.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1203 | 0    | 456  | 0    | 998  | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 0.41 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 8.3  | 0.0  | 31.6 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.6  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 8.9  | 0.0  | 31.7 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 5.1  | 0.0  | 1.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 5.3  | 0.0  | 1.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.09 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

#### Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 13.1 |
| HCM 7th LOS                  | B    |

| Intersection                  |         |        |         |        |         |         |        |
|-------------------------------|---------|--------|---------|--------|---------|---------|--------|
| Intersection Delay, s/veh 6.0 |         |        |         |        |         |         |        |
| Intersection LOS A            |         |        |         |        |         |         |        |
| Approach                      | EB      |        | WB      |        | NB      |         | SB     |
| Entry Lanes                   | 1       |        | 1       |        | 1       |         | 1      |
| Conflicting Circle Lanes      | 1       |        | 1       |        | 1       |         | 1      |
| Adj Approach Flow, veh/h      | 699     |        | 682     |        | 0       |         | 440    |
| Demand Flow Rate, veh/h       | 713     |        | 696     |        | 0       |         | 448    |
| Vehicles Circulating, veh/h   | 725     |        | 114     |        | 346     |         | 461    |
| Vehicles Exiting, veh/h       | 175     |        | 232     |        | 653     |         | 114    |
| Ped Vol Crossing Leg, #/h     | 0       |        | 0       |        | 0       |         | 0      |
| Ped Cap Adj                   | 1.000   |        | 1.000   |        | 1.000   |         | 1.000  |
| Approach Delay, s/veh         | 4.4     |        | 4.4     |        | 0.0     |         | 10.9   |
| Approach LOS                  | A       |        | A       |        | -       |         | B      |
| Lane                          | Left    | Bypass | Left    | Bypass | Left    | Left    | Bypass |
| Designated Moves              | LT      | R      | LT      | R      | LTR     | LT      | R      |
| Assumed Moves                 | LT      |        | LT      |        | LTR     | LT      |        |
| RT Channelized                |         | Free   |         | Free   |         |         | Free   |
| Lane Util                     | 1.000   |        | 1.000   |        | 1.000   | 1.000   |        |
| Follow-Up Headway, s          | 2.609   |        | 2.609   |        | 2.609   | 2.609   |        |
| Critical Headway, s           | 4.976   |        | 4.976   |        | 4.976   | 4.976   |        |
| A (Intercept)                 | 1380    |        | 1380    |        | 1380    | 1380    |        |
| B (Slope)                     | 1.02e-3 |        | 1.02e-3 |        | 1.02e-3 | 1.02e-3 |        |
| Entry Flow, veh/h             | 274     | 439    | 461     | 235    | 0       | 439     | 9      |
| Cap Entry Lane, veh/h         | 659     | 1938   | 1228    | 1938   | 970     | 862     | 1938   |
| Entry HV Adj Factor           | 0.981   | 0.980  | 0.980   | 0.980  | 1.000   | 0.981   | 0.980  |
| Flow Entry, veh/h             | 269     | 430    | 452     | 230    | 0       | 431     | 9      |
| Cap Entry, veh/h              | 646     | 1900   | 1203    | 1900   | 970     | 846     | 1900   |
| V/C Ratio                     | 0.416   | 0.226  | 0.375   | 0.121  | 0.000   | 0.509   | 0.005  |
| Control Delay, s/veh          | 11.6    | 0.0    | 6.7     | 0.0    | 3.7     | 11.1    | 0.0    |
| LOS                           | B       | A      | A       | A      | A       | B       | A      |
| 95th %tile Queue, veh         | 2       | 1      | 2       | 0      | 0       | 3       | 0      |

# HCM 7th Signalized Intersection Capacity Analysis

## 4: SR 198 EB Ramps & Hanford Armona Rd

PM 2044  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)        | 383                                                                               | 12                                                                                | 248                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 366                                                                                 | 76                                                                                  | 203                                                                                 | 274                                                                                 | 0                                                                                   |
| Future Volume (veh/h)         | 383                                                                               | 12                                                                                | 248                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 366                                                                                 | 76                                                                                  | 203                                                                                 | 274                                                                                 | 0                                                                                   |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                |                                                                                   |                                                                                   |                                                                                   | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 0                                                                                   |
| Adj Flow Rate, veh/h          | 416                                                                               | 13                                                                                | 270                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 398                                                                                 | 83                                                                                  | 221                                                                                 | 298                                                                                 | 0                                                                                   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Cap, veh/h                    | 499                                                                               | 0                                                                                 | 444                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 841                                                                                 | 175                                                                                 | 308                                                                                 | 379                                                                                 | 0                                                                                   |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Prop Arrive On Green          | 0.30                                                                              | 0.30                                                                              | 0.30                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 0.56                                                                                | 0.54                                                                                | 0.56                                                                                | 0.56                                                                                | 0.00                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 25.4                                                                              | 0.0                                                                               | 18.9                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 8.2                                                                                 | 15.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Ln Grp LOS                    | C                                                                                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     | A                                                                                   | B                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h           | 686                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 481                                                                                 |                                                                                     |                                                                                     | 519                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh         | 22.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 8.2                                                                                 |                                                                                     |                                                                                     | 15.0                                                                                |                                                                                     |                                                                                     |
| Approach LOS                  | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |
| Timer:                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                               | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       | 8.0                                                                               |                                                                                   | 9.0                                                                               |                                                                                   | 8.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 37.2                                                                              |                                                                                   | 22.0                                                                              |                                                                                   | 37.2                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | 5.5                                                                               |                                                                                   | 4.1                                                                               |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           | 55.5                                                                              |                                                                                   | 24.9                                                                              |                                                                                   | 55.5                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    | 4.1                                                                               |                                                                                   | 4.2                                                                               |                                                                                   | 4.6                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       | 11.5                                                                              |                                                                                   | 16.0                                                                              |                                                                                   | 29.0                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       | 1.9                                                                               |                                                                                   | 1.9                                                                               |                                                                                   | 2.7                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         | 0.00                                                                              |                                                                                   | 0.26                                                                              |                                                                                   | 0.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 5                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 1                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 0                                                                                 |                                                                                   | 1641                                                                              |                                                                                   | 394                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 1501                                                                              |                                                                                   | 0                                                                                 |                                                                                   | 676                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 12                                                                                |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 313                                                                               |                                                                                   | 1460                                                                              |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 4: SR 198 EB Ramps & Hanford Armona Rd

PM 2044  
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| Lane Assignment                     |      |      |      | L    |      | L+T  |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lanes in Grp                        | 0    | 0    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 0    | 416  | 0    | 519  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 0    | 1641 | 0    | 1070 | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.0  | 14.0 | 0.0  | 17.6 | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.0  | 14.0 | 0.0  | 27.0 | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 0    | 1641 | 0    | 928  | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 33.2 | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 23.7 | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 17.6 | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 33.2 | 0.0  | 0.0  | 0.0  | 2.6  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 2.6  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.43 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 0    | 499  | 0    | 686  | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.00 | 0.83 | 0.00 | 0.76 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 0    | 693  | 0    | 1207 | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 0.0  | 19.2 | 0.0  | 13.2 | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.0  | 6.2  | 0.0  | 1.7  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 0.0  | 25.4 | 0.0  | 15.0 | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.0  | 4.1  | 0.0  | 4.2  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.9  | 0.0  | 0.3  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.0  | 5.0  | 0.0  | 4.5  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.00 | 0.36 | 0.00 | 0.91 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 0    |
| Lane Assignment             |      |      |      |      |      |      |      |      |
| Lanes in Grp                | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 4: SR 198 EB Ramps & Hanford Armona Rd

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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      |      |      |      |      |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 481  | 0    | 270  | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1814 | 0    | 1460 | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 9.5  | 0.0  | 9.3  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 9.5  | 0.0  | 9.3  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.17 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1017 | 0    | 444  | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.47 | 0.00 | 0.61 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1747 | 0    | 617  | 0    | 0    | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 7.9  | 0.0  | 17.6 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.3  | 0.0  | 1.3  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 8.2  | 0.0  | 18.9 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 2.1  | 0.0  | 2.5  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.1  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 2.2  | 0.0  | 2.6  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.21 | 0.00 | 0.19 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 16.2 |
| HCM 7th LOS                  | B    |

| Intersection               |        |                                                                                   |      |        |                                                                                   |      |           |                                                                                   |                                |        |                                                                                     |       |
|----------------------------|--------|-----------------------------------------------------------------------------------|------|--------|-----------------------------------------------------------------------------------|------|-----------|-----------------------------------------------------------------------------------|--------------------------------|--------|-------------------------------------------------------------------------------------|-------|
| Int Delay, s/veh           | 67.4   |                                                                                   |      |        |                                                                                   |      |           |                                                                                   |                                |        |                                                                                     |       |
| Movement                   | EBL    | EBT                                                                               | EBR  | WBL    | WBT                                                                               | WBR  | NBL       | NBT                                                                               | NBR                            | SBL    | SBT                                                                                 | SBR   |
| Lane Configurations        |        |  |      |        |  |      |           |  |                                |        |  |       |
| Traffic Vol, veh/h         | 0      | 728                                                                               | 136  | 43     | 289                                                                               | 0    | 181       | 0                                                                                 | 70                             | 0      | 0                                                                                   | 0     |
| Future Vol, veh/h          | 0      | 728                                                                               | 136  | 43     | 289                                                                               | 0    | 181       | 0                                                                                 | 70                             | 0      | 0                                                                                   | 0     |
| Conflicting Peds, #/hr     | 0      | 0                                                                                 | 0    | 0      | 0                                                                                 | 0    | 0         | 0                                                                                 | 0                              | 0      | 0                                                                                   | 0     |
| Sign Control               | Free   | Free                                                                              | Free | Free   | Free                                                                              | Free | Stop      | Stop                                                                              | Stop                           | Stop   | Stop                                                                                | Stop  |
| RT Channelized             | -      | -                                                                                 | None | -      | -                                                                                 | None | -         | -                                                                                 | None                           | -      | -                                                                                   | None  |
| Storage Length             | -      | -                                                                                 | -    | -      | -                                                                                 | -    | -         | -                                                                                 | -                              | -      | -                                                                                   | -     |
| Veh in Median Storage, #   | -      | 0                                                                                 | -    | -      | 0                                                                                 | -    | -         | 0                                                                                 | -                              | -      | 0                                                                                   | -     |
| Grade, %                   | -      | 0                                                                                 | -    | -      | 0                                                                                 | -    | -         | 0                                                                                 | -                              | -      | 0                                                                                   | -     |
| Peak Hour Factor           | 92     | 92                                                                                | 92   | 92     | 92                                                                                | 92   | 92        | 92                                                                                | 92                             | 92     | 92                                                                                  | 92    |
| Heavy Vehicles, %          | 2      | 2                                                                                 | 2    | 2      | 2                                                                                 | 2    | 2         | 2                                                                                 | 2                              | 2      | 2                                                                                   | 2     |
| Mvmt Flow                  | 0      | 791                                                                               | 148  | 47     | 314                                                                               | 0    | 197       | 0                                                                                 | 76                             | 0      | 0                                                                                   | 0     |
|                            |        |                                                                                   |      |        |                                                                                   |      |           |                                                                                   |                                |        |                                                                                     |       |
| Major/Minor                | Major1 |                                                                                   |      | Major2 |                                                                                   |      | Minor1    |                                                                                   |                                | Minor2 |                                                                                     |       |
| Conflicting Flow All       | 314    | 0                                                                                 | 0    | 939    | 0                                                                                 | 0    | 1273      | 1273                                                                              | 865                            | 1199   | 1347                                                                                | 314   |
| Stage 1                    | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 865       | 865                                                                               | -                              | 408    | 408                                                                                 | -     |
| Stage 2                    | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 408       | 408                                                                               | -                              | 791    | 939                                                                                 | -     |
| Critical Hdwy              | 4.12   | -                                                                                 | -    | 4.12   | -                                                                                 | -    | 7.12      | 6.52                                                                              | 6.22                           | 7.12   | 6.52                                                                                | 6.22  |
| Critical Hdwy Stg 1        | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 6.12      | 5.52                                                                              | -                              | 6.12   | 5.52                                                                                | -     |
| Critical Hdwy Stg 2        | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 6.12      | 5.52                                                                              | -                              | 6.12   | 5.52                                                                                | -     |
| Follow-up Hdwy             | 2.218  | -                                                                                 | -    | 2.218  | -                                                                                 | -    | 3.518     | 4.018                                                                             | 3.318                          | 3.518  | 4.018                                                                               | 3.318 |
| Pot Cap-1 Maneuver         | 1246   | -                                                                                 | -    | 730    | -                                                                                 | -    | ~ 144     | 167                                                                               | 353                            | 162    | 151                                                                                 | 726   |
| Stage 1                    | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 348       | 371                                                                               | -                              | 620    | 597                                                                                 | -     |
| Stage 2                    | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 620       | 597                                                                               | -                              | 383    | 343                                                                                 | -     |
| Platoon blocked, %         |        | -                                                                                 | -    |        | -                                                                                 | -    |           |                                                                                   |                                |        |                                                                                     |       |
| Mov Cap-1 Maneuver         | 1246   | -                                                                                 | -    | 730    | -                                                                                 | -    | ~ 133     | 154                                                                               | 353                            | 117    | 139                                                                                 | 726   |
| Mov Cap-2 Maneuver         | -      | -                                                                                 | -    | -      | -                                                                                 | -    | ~ 133     | 154                                                                               | -                              | 117    | 139                                                                                 | -     |
| Stage 1                    | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 348       | 371                                                                               | -                              | 572    | 551                                                                                 | -     |
| Stage 2                    | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 572       | 551                                                                               | -                              | 300    | 343                                                                                 | -     |
|                            |        |                                                                                   |      |        |                                                                                   |      |           |                                                                                   |                                |        |                                                                                     |       |
| Approach                   | EB     |                                                                                   |      | WB     |                                                                                   |      | NB        |                                                                                   |                                | SB     |                                                                                     |       |
| HCM Control Delay, s/v     | 0      |                                                                                   |      | 1.33   |                                                                                   |      | \$ 386.96 |                                                                                   |                                | 0      |                                                                                     |       |
| HCM LOS                    |        |                                                                                   |      |        |                                                                                   |      | F         |                                                                                   |                                | A      |                                                                                     |       |
|                            |        |                                                                                   |      |        |                                                                                   |      |           |                                                                                   |                                |        |                                                                                     |       |
| Minor Lane/Major Mvmt      | NBLn1  | EBL                                                                               | EBT  | EBR    | WBL                                                                               | WBT  | WBR       | SBLn1                                                                             |                                |        |                                                                                     |       |
| Capacity (veh/h)           | 161    | 1246                                                                              | -    | -      | 233                                                                               | -    | -         | -                                                                                 |                                |        |                                                                                     |       |
| HCM Lane V/C Ratio         | 1.694  | -                                                                                 | -    | -      | 0.064                                                                             | -    | -         | -                                                                                 |                                |        |                                                                                     |       |
| HCM Control Delay (s/veh)  | \$ 387 | 0                                                                                 | -    | -      | 10.3                                                                              | 0    | -         | 0                                                                                 |                                |        |                                                                                     |       |
| HCM Lane LOS               | F      | A                                                                                 | -    | -      | B                                                                                 | A    | -         | A                                                                                 |                                |        |                                                                                     |       |
| HCM 95th %tile Q(veh)      | 19.3   | 0                                                                                 | -    | -      | 0.2                                                                               | -    | -         | -                                                                                 |                                |        |                                                                                     |       |
| Notes                      |        |                                                                                   |      |        |                                                                                   |      |           |                                                                                   |                                |        |                                                                                     |       |
| ~: Volume exceeds capacity |        | \$: Delay exceeds 300s                                                            |      |        | +: Computation Not Defined                                                        |      |           |                                                                                   | *: All major volume in platoon |        |                                                                                     |       |

# HCM 7th Signalized Intersection Capacity Analysis

## 6: 12th Ave & Hanford Armona Rd

PM 2044  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |  |  |  |  |  |   |  |  |  |  |  |
| Traffic Volume (veh/h)        | 174                                                                               | 360                                                                               | 71                                                                                | 51                                                                                | 336                                                                               | 349                                                                               | 75                                                                                  | 447                                                                                 | 54                                                                                  | 476                                                                                 | 491                                                                                 | 216                                                                                 |
| Future Volume (veh/h)         | 174                                                                               | 360                                                                               | 71                                                                                | 51                                                                                | 336                                                                               | 349                                                                               | 75                                                                                  | 447                                                                                 | 54                                                                                  | 476                                                                                 | 491                                                                                 | 216                                                                                 |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         | No                                                                                |                                                                                   |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                                | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 189                                                                               | 391                                                                               | 77                                                                                | 55                                                                                | 365                                                                               | 379                                                                               | 82                                                                                  | 486                                                                                 | 59                                                                                  | 517                                                                                 | 534                                                                                 | 235                                                                                 |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Cap, veh/h                    | 219                                                                               | 575                                                                               | 449                                                                               | 673                                                                               | 1093                                                                              | 853                                                                               | 122                                                                                 | 564                                                                                 | 68                                                                                  | 551                                                                                 | 1053                                                                                | 462                                                                                 |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Prop Arrive On Green          | 0.13                                                                              | 0.31                                                                              | 0.31                                                                              | 0.41                                                                              | 0.58                                                                              | 0.58                                                                              | 0.07                                                                                | 0.18                                                                                | 0.16                                                                                | 0.34                                                                                | 0.44                                                                                | 0.43                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 79.1                                                                              | 42.7                                                                              | 51.0                                                                              | 21.7                                                                              | 13.6                                                                              | 11.5                                                                              | 60.1                                                                                | 67.4                                                                                | 68.2                                                                                | 59.3                                                                                | 24.8                                                                                | 25.2                                                                                |
| Ln Grp LOS                    | E                                                                                 | D                                                                                 | D                                                                                 | C                                                                                 | B                                                                                 | B                                                                                 | E                                                                                   | E                                                                                   | E                                                                                   | E                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h           | 657                                                                               |                                                                                   |                                                                                   |                                                                                   | 799                                                                               |                                                                                   |                                                                                     |                                                                                     | 627                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh         | 54.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 13.2                                                                              |                                                                                   |                                                                                     |                                                                                     | 66.8                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                  | D                                                                                 |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Timer:                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 2                                                                                 | 1                                                                                 | 4                                                                                 | 3                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       | 4.0                                                                               | 2.0                                                                               | 3.0                                                                               | 2.0                                                                               | 2.0                                                                               | 4.0                                                                               | 2.0                                                                                 | 3.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 25.2                                                                              | 44.3                                                                              | 40.9                                                                              | 54.5                                                                              | 12.9                                                                              | 56.6                                                                              | 20.0                                                                                | 75.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | * 5.5                                                                             | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                                 | 5.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           | * 20                                                                              | 39.0                                                                              | 35.4                                                                              | 5.4                                                                               | 11.6                                                                              | 45.6                                                                              | 14.5                                                                                | 26.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    | 4.0                                                                               | 4.1                                                                               | 4.0                                                                               | 4.1                                                                               | 4.1                                                                               | 4.1                                                                               | 4.1                                                                                 | 4.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       | 19.8                                                                              | 38.7                                                                              | 24.0                                                                              | 4.5                                                                               | 7.8                                                                               | 21.5                                                                              | 15.5                                                                                | 16.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       | 0.0                                                                               | 0.1                                                                               | 1.3                                                                               | 0.0                                                                               | 0.1                                                                               | 3.0                                                                               | 0.0                                                                                 | 2.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.84                                                                              | 0.93                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.01                                                                              | 1.00                                                                                | 0.00                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 1                                                                                 |                                                                                   |                                                                                   | 3                                                                                 |                                                                                   |                                                                                   | 5                                                                                   |                                                                                     |                                                                                     | 7                                                                                   |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 1641                                                                              |                                                                                   |                                                                                   | 1641                                                                              |                                                                                   |                                                                                   | 1641                                                                                |                                                                                     |                                                                                     | 1641                                                                                |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 3192                                                                              |                                                                                   |                                                                                   | 1870                                                                              |                                                                                   |                                                                                   | 2403                                                                                |                                                                                     |                                                                                     | 1870                                                                                |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 12                                                                                |                                                                                   |                                                                                   | 14                                                                                |                                                                                   |                                                                                   | 16                                                                                  |                                                                                     |                                                                                     | 18                                                                                  |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 386                                                                               |                                                                                   |                                                                                   | 1460                                                                              |                                                                                   |                                                                                   | 1054                                                                                |                                                                                     |                                                                                     | 1460                                                                                |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 1                                                                                 | 0                                                                                 | 3                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report



# HCM 7th Signalized Intersection Capacity Analysis

## 6: 12th Ave & Hanford Armona Rd

PM 2044  
07/16/2024

| Lane Assignment                     | L (Prot) |      | L (Prot) |      | L (Prot) | L (Prot) |      |      |
|-------------------------------------|----------|------|----------|------|----------|----------|------|------|
| Lanes in Grp                        | 0        | 1    | 0        | 1    | 1        | 0        | 1    | 0    |
| Grp Vol (v), veh/h                  | 0        | 517  | 0        | 55   | 82       | 0        | 189  | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0        | 1641 | 0        | 1641 | 1641     | 0        | 1641 | 0    |
| Q Serve Time (g_s), s               | 0.0      | 36.7 | 0.0      | 2.5  | 5.8      | 0.0      | 13.5 | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0      | 36.7 | 0.0      | 2.5  | 5.8      | 0.0      | 13.5 | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0        | 0    | 0        | 0    | 0        | 0        | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0        | 0    | 0        | 0    | 0        | 0        | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0      | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0      | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0      | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0      | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0      | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00     | 1.00 | 0.00     | 1.00 | 1.00     | 0.00     | 1.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0        | 551  | 0        | 673  | 122      | 0        | 219  | 0    |
| V/C Ratio (X)                       | 0.00     | 0.94 | 0.00     | 0.08 | 0.67     | 0.00     | 0.86 | 0.00 |
| Avail Cap (c_a), veh/h              | 0        | 554  | 0        | 673  | 179      | 0        | 219  | 0    |
| Upstream Filter (I)                 | 0.00     | 0.80 | 0.00     | 0.87 | 0.93     | 0.00     | 1.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0      | 38.7 | 0.0      | 21.6 | 54.1     | 0.0      | 50.9 | 0.0  |
| Incr Delay (d2), s/veh              | 0.0      | 20.6 | 0.0      | 0.0  | 5.9      | 0.0      | 28.2 | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0      | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0      | 59.3 | 0.0      | 21.7 | 60.1     | 0.0      | 79.1 | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0      | 13.7 | 0.0      | 0.9  | 2.3      | 0.0      | 5.3  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0      | 3.2  | 0.0      | 0.0  | 0.2      | 0.0      | 1.7  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0      | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00     | 1.00 | 0.00     | 1.00 | 1.00     | 0.00     | 1.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0      | 16.9 | 0.0      | 0.9  | 2.5      | 0.0      | 7.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00     | 2.14 | 0.00     | 0.46 | 0.32     | 0.00     | 1.19 | 0.00 |
| Initial Q (Qb), veh                 | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0      | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0      | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0      | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0      | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0        | 0    | 0        | 0    | 0        | 0        | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0      | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 2    | 0    | 4    | 0    | 0    | 6    | 0    | 8    |
| Lane Assignment             | T    |      | T    |      |      | T    |      | T    |
| Lanes in Grp                | 1    | 0    | 1    | 0    | 0    | 1    | 0    | 1    |
| Grp Vol (v), veh/h          | 270  | 0    | 391  | 0    | 0    | 394  | 0    | 365  |
| Grp Sat Flow (s), veh/h/ln  | 1777 | 0    | 1870 | 0    | 0    | 1777 | 0    | 1870 |
| Q Serve Time (g_s), s       | 17.7 | 0.0  | 22.0 | 0.0  | 0.0  | 19.2 | 0.0  | 12.1 |
| Cycle Q Clear Time (g_c), s | 17.7 | 0.0  | 22.0 | 0.0  | 0.0  | 19.2 | 0.0  | 12.1 |
| Lane Grp Cap (c), veh/h     | 314  | 0    | 575  | 0    | 0    | 779  | 0    | 1093 |
| V/C Ratio (X)               | 0.86 | 0.00 | 0.68 | 0.00 | 0.00 | 0.51 | 0.00 | 0.33 |
| Avail Cap (c_a), veh/h      | 314  | 0    | 575  | 0    | 0    | 779  | 0    | 1093 |
| Upstream Filter (I)         | 0.93 | 0.00 | 1.00 | 0.00 | 0.00 | 0.80 | 0.00 | 0.87 |
| Uniform Delay (d1), s/veh   | 48.0 | 0.0  | 36.4 | 0.0  | 0.0  | 24.3 | 0.0  | 12.9 |
| Incr Delay (d2), s/veh      | 19.4 | 0.0  | 6.4  | 0.0  | 0.0  | 0.4  | 0.0  | 0.7  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 67.4 | 0.0  | 42.7 | 0.0  | 0.0  | 24.8 | 0.0  | 13.6 |
| 1st-Term Q (Q1), veh/ln     | 7.4  | 0.0  | 9.4  | 0.0  | 0.0  | 7.5  | 0.0  | 4.5  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 6: 12th Ave & Hanford Armona Rd

PM 2044  
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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 1.7  | 0.0  | 1.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.2  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln | 9.1  | 0.0  | 10.4 | 0.0  | 0.0  | 7.6  | 0.0  | 4.7  |
| %ile Storage Ratio (RQ%)     | 0.08 | 0.00 | 0.05 | 0.00 | 0.00 | 0.13 | 0.00 | 0.02 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 12   | 0    | 14   | 0    | 0    | 16   | 0    | 18   |
| Lane Assignment                  | T+R  |      | R    |      |      | T+R  |      | R    |
| Lanes in Grp                     | 1    | 0    | 1    | 0    | 0    | 1    | 0    | 1    |
| Grp Vol (v), veh/h               | 275  | 0    | 77   | 0    | 0    | 375  | 0    | 379  |
| Grp Sat Flow (s), veh/h/ln       | 1801 | 0    | 1460 | 0    | 0    | 1681 | 0    | 1460 |
| Q Serve Time (g_s), s            | 17.8 | 0.0  | 5.9  | 0.0  | 0.0  | 19.5 | 0.0  | 14.8 |
| Cycle Q Clear Time (g_c), s      | 17.8 | 0.0  | 5.9  | 0.0  | 0.0  | 19.5 | 0.0  | 14.8 |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.21 | 0.00 | 1.00 | 0.00 | 0.00 | 0.63 | 0.00 | 1.00 |
| Lane Grp Cap (c), veh/h          | 318  | 0    | 449  | 0    | 0    | 736  | 0    | 853  |
| V/C Ratio (X)                    | 0.87 | 0.00 | 0.17 | 0.00 | 0.00 | 0.51 | 0.00 | 0.44 |
| Avail Cap (c_a), veh/h           | 318  | 0    | 449  | 0    | 0    | 736  | 0    | 853  |
| Upstream Filter (I)              | 0.93 | 0.00 | 1.00 | 0.00 | 0.00 | 0.80 | 0.00 | 0.87 |
| Uniform Delay (d1), s/veh        | 48.2 | 0.0  | 50.2 | 0.0  | 0.0  | 24.8 | 0.0  | 10.0 |
| Incr Delay (d2), s/veh           | 20.0 | 0.0  | 0.8  | 0.0  | 0.0  | 0.5  | 0.0  | 1.5  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 68.2 | 0.0  | 51.0 | 0.0  | 0.0  | 25.2 | 0.0  | 11.5 |
| 1st-Term Q (Q1), veh/ln          | 7.6  | 0.0  | 1.6  | 0.0  | 0.0  | 7.2  | 0.0  | 3.9  |
| 2nd-Term Q (Q2), veh/ln          | 1.8  | 0.0  | 0.1  | 0.0  | 0.0  | 0.1  | 0.0  | 0.3  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln     | 9.4  | 0.0  | 1.7  | 0.0  | 0.0  | 7.3  | 0.0  | 4.3  |
| %ile Storage Ratio (RQ%)         | 0.09 | 0.00 | 0.43 | 0.00 | 0.00 | 0.13 | 0.00 | 2.18 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 40.9 |
| HCM 7th LOS                  | D    |

## Notes

\* HCM 7th Edition computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 7th Signalized Intersection Capacity Analysis

## 7: 11th Ave & Hanford Armona Rd

PM 2044  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |  |  |  |  |                                                                                   |   |  |  |  |  |  |
| Traffic Volume (veh/h)        | 269                                                                               | 429                                                                               | 69                                                                                | 109                                                                               | 308                                                                               | 119                                                                               | 97                                                                                  | 520                                                                                 | 109                                                                                 | 163                                                                                 | 484                                                                                 | 311                                                                                 |
| Future Volume (veh/h)         | 269                                                                               | 429                                                                               | 69                                                                                | 109                                                                               | 308                                                                               | 119                                                                               | 97                                                                                  | 520                                                                                 | 109                                                                                 | 163                                                                                 | 484                                                                                 | 311                                                                                 |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                                | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 292                                                                               | 466                                                                               | 75                                                                                | 118                                                                               | 335                                                                               | 129                                                                               | 105                                                                                 | 565                                                                                 | 118                                                                                 | 177                                                                                 | 526                                                                                 | 338                                                                                 |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Cap, veh/h                    | 366                                                                               | 970                                                                               | 758                                                                               | 354                                                                               | 667                                                                               | 257                                                                               | 170                                                                                 | 759                                                                                 | 592                                                                                 | 172                                                                                 | 759                                                                                 | 592                                                                                 |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Prop Arrive On Green          | 0.52                                                                              | 0.52                                                                              | 0.52                                                                              | 0.52                                                                              | 0.52                                                                              | 0.50                                                                              | 0.41                                                                                | 0.41                                                                                | 0.41                                                                                | 0.41                                                                                | 0.41                                                                                | 0.41                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 42.5                                                                              | 17.1                                                                              | 13.1                                                                              | 28.1                                                                              | 0.0                                                                               | 18.7                                                                              | 50.7                                                                                | 30.8                                                                                | 20.5                                                                                | 125.6                                                                               | 28.8                                                                                | 25.7                                                                                |
| Ln Grp LOS                    | D                                                                                 | B                                                                                 | B                                                                                 | C                                                                                 |                                                                                   | B                                                                                 | D                                                                                   | C                                                                                   | C                                                                                   | F                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h           |                                                                                   | 833                                                                               |                                                                                   |                                                                                   | 582                                                                               |                                                                                   |                                                                                     | 788                                                                                 |                                                                                     |                                                                                     | 1041                                                                                |                                                                                     |
| Approach Delay, s/veh         |                                                                                   | 25.7                                                                              |                                                                                   |                                                                                   | 20.6                                                                              |                                                                                   |                                                                                     | 31.9                                                                                |                                                                                     |                                                                                     | 44.2                                                                                |                                                                                     |
| Approach LOS                  |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer:                        |                                                                                   | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                   | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                   |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Case No                       |                                                                                   | 5.0                                                                               |                                                                                   |                                                                                   | 5.0                                                                               |                                                                                   | 5.0                                                                                 |                                                                                     | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      |                                                                                   | 47.0                                                                              |                                                                                   |                                                                                   | 59.0                                                                              |                                                                                   | 47.0                                                                                |                                                                                     | 59.0                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                   | 5.5                                                                               |                                                                                   | 5.5                                                                                 |                                                                                     | 5.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           |                                                                                   | 41.5                                                                              |                                                                                   |                                                                                   | 53.5                                                                              |                                                                                   | 41.5                                                                                |                                                                                     | 53.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                   | 4.6                                                                               |                                                                                   | 4.5                                                                                 |                                                                                     | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       |                                                                                   | 45.0                                                                              |                                                                                   |                                                                                   | 55.9                                                                              |                                                                                   | 45.0                                                                                |                                                                                     | 30.7                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   | 0.0                                                                                 |                                                                                     | 2.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   | 0.00                                                                              |                                                                                   | 1.00                                                                                |                                                                                     | 0.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   | 7                                                                                 |                                                                                   | 1                                                                                   |                                                                                     | 3                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 590                                                                               |                                                                                   |                                                                                   | 855                                                                               |                                                                                   | 698                                                                                 |                                                                                     | 796                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                   |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 1870                                                                              |                                                                                   |                                                                                   | 1870                                                                              |                                                                                   | 1870                                                                                |                                                                                     | 1286                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 12                                                                                |                                                                                   |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                  |                                                                                     | 18                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 1460                                                                              |                                                                                   |                                                                                   | 1460                                                                              |                                                                                   | 1460                                                                                |                                                                                     | 495                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                   | 0                                                                                   | 3                                                                                   |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 7: 11th Ave & Hanford Armona Rd

PM 2044  
07/16/2024

|                                     |      |      |      |      |      |       |      |      |
|-------------------------------------|------|------|------|------|------|-------|------|------|
| Lane Assignment                     |      | L    |      | L    |      | L     |      | L    |
| Lanes in Grp                        | 0    | 1    | 0    | 1    | 0    | 1     | 0    | 1    |
| Grp Vol (v), veh/h                  | 0    | 105  | 0    | 292  | 0    | 177   | 0    | 118  |
| Grp Sat Flow (s), veh/h/ln          | 0    | 590  | 0    | 855  | 0    | 698   | 0    | 796  |
| Q Serve Time (g_s), s               | 0.0  | 18.4 | 0.0  | 35.8 | 0.0  | 15.7  | 0.0  | 11.8 |
| Cycle Q Clear Time (g_c), s         | 0.0  | 43.0 | 0.0  | 53.9 | 0.0  | 43.0  | 0.0  | 28.7 |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 590  | 0    | 855  | 0    | 698   | 0    | 796  |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0     | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 43.0 | 0.0  | 55.0 | 0.0  | 43.0  | 0.0  | 55.0 |
| Perm LT Serve Time (g_u), s         | 0.0  | 18.4 | 0.0  | 36.9 | 0.0  | 15.7  | 0.0  | 38.1 |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 18.4 | 0.0  | 35.8 | 0.0  | 15.7  | 0.0  | 11.8 |
| Time to First Blk (g_f), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00  | 0.00 | 1.00 |
| Lane Grp Cap (c), veh/h             | 0    | 170  | 0    | 366  | 0    | 172   | 0    | 354  |
| V/C Ratio (X)                       | 0.00 | 0.62 | 0.00 | 0.80 | 0.00 | 1.03  | 0.00 | 0.33 |
| Avail Cap (c_a), veh/h              | 0    | 170  | 0    | 366  | 0    | 172   | 0    | 354  |
| Upstream Filter (I)                 | 0.00 | 1.00 | 0.00 | 0.47 | 0.00 | 1.00  | 0.00 | 1.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 44.1 | 0.0  | 34.2 | 0.0  | 48.2  | 0.0  | 25.5 |
| Incr Delay (d2), s/veh              | 0.0  | 6.6  | 0.0  | 8.4  | 0.0  | 77.3  | 0.0  | 2.5  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 50.7 | 0.0  | 42.5 | 0.0  | 125.6 | 0.0  | 28.1 |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 2.6  | 0.0  | 6.7  | 0.0  | 4.4   | 0.0  | 2.1  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.3  | 0.0  | 0.9  | 0.0  | 3.7   | 0.0  | 0.2  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00  | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 2.9  | 0.0  | 7.6  | 0.0  | 8.0   | 0.0  | 2.3  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.67 | 0.00 | 1.92 | 0.00 | 2.92  | 0.00 | 0.59 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 1.4   | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0     | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.3   | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 8    |
| Lane Assignment             |      | T    |      | T    |      | T    |      |      |
| Lanes in Grp                | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 565  | 0    | 466  | 0    | 526  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1870 | 0    | 1870 | 0    | 1870 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 27.3 | 0.0  | 16.9 | 0.0  | 24.6 | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 27.3 | 0.0  | 16.9 | 0.0  | 24.6 | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 759  | 0    | 970  | 0    | 759  | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.74 | 0.00 | 0.48 | 0.00 | 0.69 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 759  | 0    | 970  | 0    | 759  | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 1.00 | 0.00 | 0.47 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 26.8 | 0.0  | 16.3 | 0.0  | 26.0 | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 4.0  | 0.0  | 0.8  | 0.0  | 2.7  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 30.8 | 0.0  | 17.1 | 0.0  | 28.8 | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 10.9 | 0.0  | 6.3  | 0.0  | 9.9  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 7: 11th Ave & Hanford Armona Rd

PM 2044  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.8  | 0.0  | 0.2  | 0.0  | 0.6  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 11.8 | 0.0  | 6.5  | 0.0  | 10.5 | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.17 | 0.00 | 0.03 | 0.00 | 0.11 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 18   |
| Lane Assignment                  |      | R    |      | R    |      | R    |      | T+R  |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 1    |
| Grp Vol (v), veh/h               | 0    | 118  | 0    | 75   | 0    | 338  | 0    | 464  |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1460 | 0    | 1460 | 0    | 1460 | 0    | 1781 |
| Q Serve Time (g_s), s            | 0.0  | 5.5  | 0.0  | 2.8  | 0.0  | 19.0 | 0.0  | 18.1 |
| Cycle Q Clear Time (g_c), s      | 0.0  | 5.5  | 0.0  | 2.8  | 0.0  | 19.0 | 0.0  | 18.1 |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.28 |
| Lane Grp Cap (c), veh/h          | 0    | 592  | 0    | 758  | 0    | 592  | 0    | 924  |
| V/C Ratio (X)                    | 0.00 | 0.20 | 0.00 | 0.10 | 0.00 | 0.57 | 0.00 | 0.50 |
| Avail Cap (c_a), veh/h           | 0    | 592  | 0    | 758  | 0    | 592  | 0    | 924  |
| Upstream Filter (I)              | 0.00 | 1.00 | 0.00 | 0.47 | 0.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 20.4 | 0.0  | 12.9 | 0.0  | 24.4 | 0.0  | 16.8 |
| Incr Delay (d2), s/veh           | 0.0  | 0.2  | 0.0  | 0.1  | 0.0  | 1.3  | 0.0  | 1.9  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 20.5 | 0.0  | 13.1 | 0.0  | 25.7 | 0.0  | 18.7 |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 1.7  | 0.0  | 0.8  | 0.0  | 5.9  | 0.0  | 6.4  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.5  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 1.8  | 0.0  | 0.8  | 0.0  | 6.1  | 0.0  | 6.9  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.45 | 0.00 | 0.42 | 0.00 | 0.78 | 0.00 | 0.03 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 32.2 |
| HCM 7th LOS                  | C    |

# HCM 7th Signalized Intersection Capacity Analysis

## 8: 12th Ave & Hume Ave

PM 2044  
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|                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|---|---|---|
|                               |  |  |  |  |  |  |      |   |   |   |
| Movement                      | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |      |   |   |   |
| Lane Configurations           |  |  |  |                                                                                   |  |  |      |   |   |   |
| Traffic Volume (veh/h)        | 11                                                                                | 173                                                                               | 288                                                                               | 33                                                                                | 365                                                                               | 323                                                                               |      |   |   |   |
| Future Volume (veh/h)         | 11                                                                                | 173                                                                               | 288                                                                               | 33                                                                                | 365                                                                               | 323                                                                               |      |   |   |   |
| Number                        | 3                                                                                 | 18                                                                                | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 |      |   |   |   |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |      |   |   |   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |   |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |      |   |   |   |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |   |
| Work Zone On Approach         | No                                                                                |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |      |   |   |   |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              |      |   |   |   |
| Adj Flow Rate, veh/h          | 12                                                                                | 188                                                                               | 313                                                                               | 36                                                                                | 397                                                                               | 351                                                                               |      |   |   |   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |      |   |   |   |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |      |   |   |   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |      |   |   |   |
| Cap, veh/h                    | 239                                                                               | 213                                                                               | 1282                                                                              | 148                                                                               | 759                                                                               | 1457                                                                              |      |   |   |   |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |   |
| Prop Arrive On Green          | 0.15                                                                              | 0.15                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              |      |   |   |   |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Ln Grp Delay, s/veh           | 39.0                                                                              | 73.0                                                                              | 0.0                                                                               | 3.6                                                                               | 9.0                                                                               | 3.5                                                                               |      |   |   |   |
| Ln Grp LOS                    | D                                                                                 | E                                                                                 |                                                                                   | A                                                                                 | A                                                                                 | A                                                                                 |      |   |   |   |
| Approach Vol, veh/h           | 200                                                                               |                                                                                   | 349                                                                               |                                                                                   |                                                                                   | 748                                                                               |      |   |   |   |
| Approach Delay, s/veh         | 71.0                                                                              |                                                                                   | 3.6                                                                               |                                                                                   |                                                                                   | 6.4                                                                               |      |   |   |   |
| Approach LOS                  | E                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |      |   |   |   |
| Timer:                        |                                                                                   | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6    | 7 | 8 |   |
| Assigned Phs                  |                                                                                   |                                                                                   | 2                                                                                 | 8                                                                                 |                                                                                   |                                                                                   | 6    |   |   |   |
| Case No                       |                                                                                   |                                                                                   | 8.0                                                                               | 9.0                                                                               |                                                                                   |                                                                                   | 6.0  |   |   |   |
| Phs Duration (G+Y+Rc), s      |                                                                                   |                                                                                   | 86.5                                                                              | 19.5                                                                              |                                                                                   |                                                                                   | 86.5 |   |   |   |
| Change Period (Y+Rc), s       |                                                                                   |                                                                                   | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                   | 4.0  |   |   |   |
| Max Green (Gmax), s           |                                                                                   |                                                                                   | 81.0                                                                              | 17.0                                                                              |                                                                                   |                                                                                   | 81.0 |   |   |   |
| Max Allow Headway (MAH), s    |                                                                                   |                                                                                   | 4.0                                                                               | 4.3                                                                               |                                                                                   |                                                                                   | 4.7  |   |   |   |
| Max Q Clear (g_c+I1), s       |                                                                                   |                                                                                   | 7.5                                                                               | 15.4                                                                              |                                                                                   |                                                                                   | 28.3 |   |   |   |
| Green Ext Time (g_e), s       |                                                                                   |                                                                                   | 1.3                                                                               | 0.1                                                                               |                                                                                   |                                                                                   | 4.2  |   |   |   |
| Prob of Phs Call (p_c)        |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 1.00 |   |   |   |
| Prob of Max Out (p_x)         |                                                                                   |                                                                                   | 0.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 0.00 |   |   |   |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 5                                                                                 | 3                                                                                 |                                                                                   |                                                                                   | 1    |   |   |   |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 0                                                                                 | 1641                                                                              |                                                                                   |                                                                                   | 950  |   |   |   |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 2                                                                                 | 8                                                                                 |                                                                                   |                                                                                   | 6    |   |   |   |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 1647                                                                              | 0                                                                                 |                                                                                   |                                                                                   | 1870 |   |   |   |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 12                                                                                | 18                                                                                |                                                                                   |                                                                                   | 16   |   |   |   |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 189                                                                               | 1460                                                                              |                                                                                   |                                                                                   | 0    |   |   |   |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 0                                                                                 | 5                                                                                 | 3                                                                                 | 0                                                                                 | 0    | 1 | 0 | 0 |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 8: 12th Ave & Hume Ave

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|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     | L    |      |      |      |      | L    |      |      |
| Lanes in Grp                        | 0    | 0    | 1    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 12   | 0    | 0    | 397  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 1641 | 0    | 0    | 950  | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.7  | 0.0  | 0.0  | 20.8 | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.7  | 0.0  | 0.0  | 26.3 | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 1641 | 0    | 0    | 950  | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 82.5 | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 77.0 | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 20.8 | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 82.5 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 239  | 0    | 0    | 759  | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 | 0.52 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 263  | 0    | 0    | 759  | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.86 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 39.0 | 0.0  | 0.0  | 6.8  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  | 2.2  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 39.0 | 0.0  | 0.0  | 9.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  | 2.7  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.5  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  | 3.2  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 | 0.41 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 8    | 0    | 0    | 6    | 0    | 0    |
| Lane Assignment             | T    |      |      |      |      |      |      |      |
| Lanes in Grp                | 0    | 0    | 0    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 0    | 0    | 0    | 0    | 351  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 0    | 0    | 0    | 0    | 1870 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 5.4  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 5.4  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 0    | 0    | 0    | 0    | 1457 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.24 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 0    | 0    | 0    | 0    | 1457 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.86 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 3.2  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 3.5  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 1.1  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 8: 12th Ave & Hume Ave

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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 1.2  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 18   | 0    | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      |      |      |      |      |
| Lanes in Grp                     | 0    | 1    | 1    | 0    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 349  | 188  | 0    | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1836 | 1460 | 0    | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 5.5  | 13.4 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 5.5  | 13.4 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.10 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1430 | 213  | 0    | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.24 | 0.88 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1430 | 234  | 0    | 0    | 0    | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 3.2  | 44.4 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.4  | 28.6 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 3.6  | 73.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 1.1  | 4.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.2  | 1.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 1.2  | 6.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.02 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 15.6 |
| HCM 7th LOS                  | B    |





# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

PM 2044+Project

07/16/2024

| Movement                      | EBL | EBT  | EBR  | WBL  | WBT   | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|-------------------------------|-----|------|------|------|-------|------|------|------|------|------|------|------|
| Lane Configurations           |     |      |      | ↰↱   |       | ↰↱   | ↰    | ↱↱   |      |      | ↱↱↱  | ↰    |
| Traffic Volume (veh/h)        | 0   | 0    | 0    | 264  | 0     | 636  | 44   | 1497 | 0    | 0    | 1781 | 817  |
| Future Volume (veh/h)         | 0   | 0    | 0    | 264  | 0     | 636  | 44   | 1497 | 0    | 0    | 1781 | 817  |
| Number                        |     |      |      | 3    | 8     | 18   | 5    | 2    | 12   | 1    | 6    | 16   |
| Initial Q, veh                |     |      |      | 0    | 0     | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Lane Width Adj.               |     |      |      | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped-Bike Adj (A_pbT)          |     |      |      | 1.00 |       | 1.00 | 1.00 |      | 1.00 | 1.00 |      | 1.00 |
| Parking Bus Adj               |     |      |      | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach         |     |      |      | No   |       |      |      | No   |      |      |      | No   |
| Lanes Open During Work Zone   |     |      |      |      |       |      |      |      |      |      |      |      |
| Adj Sat Flow, veh/h/ln        |     |      |      | 1723 | 0     | 1723 | 1723 | 1870 | 0    | 0    | 1870 | 1723 |
| Adj Flow Rate, veh/h          |     |      |      | 287  | 0     | 691  | 48   | 1627 | 0    | 0    | 1936 | 888  |
| Peak Hour Factor              |     |      |      | 0.92 | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, %          |     |      |      | 2    | 0     | 2    | 2    | 2    | 0    | 0    | 2    | 2    |
| Opposing Right Turn Influence |     |      |      | Yes  |       |      | Yes  |      |      | No   |      |      |
| Cap, veh/h                    |     |      |      | 911  | 0     | 736  | 306  | 2833 | 0    | 0    | 2848 | 814  |
| HCM Platoon Ratio             |     |      |      | 1.00 | 1.00  | 1.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Prop Arrive On Green          |     |      |      | 0.29 | 0.00  | 0.29 | 0.37 | 1.00 | 0.00 | 0.00 | 0.56 | 0.56 |
| Unsig. Movement Delay         |     |      |      |      |       |      |      |      |      |      |      |      |
| Ln Grp Delay, s/veh           |     |      |      | 29.3 | 0.0   | 55.8 | 27.3 | 0.6  | 0.0  | 0.0  | 17.7 | 82.1 |
| Ln Grp LOS                    |     |      |      | C    |       | E    | C    | A    |      |      | B    | F    |
| Approach Vol, veh/h           |     |      |      | 978  |       |      |      | 1675 |      |      |      | 2824 |
| Approach Delay, s/veh         |     |      |      | 48.0 |       |      |      | 1.4  |      |      |      | 38.0 |
| Approach LOS                  |     |      |      | D    |       |      |      | A    |      |      |      | D    |
| Timer:                        | 1   | 2    | 3    | 4    | 5     | 6    | 7    | 8    |      |      |      |      |
| Assigned Phs                  |     | 2    | 8    |      | 6     | 5    |      |      |      |      |      |      |
| Case No                       |     | 4.0  | 9.0  |      | 7.0   | 2.0  |      |      |      |      |      |      |
| Phs Duration (G+Y+Rc), s      |     | 87.1 | 33.7 |      | 62.0  | 25.1 |      |      |      |      |      |      |
| Change Period (Y+Rc), s       |     | 5.5  | 4.0  |      | * 5.5 | 5.5  |      |      |      |      |      |      |
| Max Green (Gmax), s           |     | 64.5 | 30.0 |      | * 57  | 4.0  |      |      |      |      |      |      |
| Max Allow Headway (MAH), s    |     | 4.0  | 4.3  |      | 4.1   | 4.1  |      |      |      |      |      |      |
| Max Q Clear (g_c+I1), s       |     | 2.0  | 29.3 |      | 60.0  | 4.0  |      |      |      |      |      |      |
| Green Ext Time (g_e), s       |     | 11.1 | 0.4  |      | 0.0   | 0.0  |      |      |      |      |      |      |
| Prob of Phs Call (p_c)        |     | 1.00 | 1.00 |      | 1.00  | 0.75 |      |      |      |      |      |      |
| Prob of Max Out (p_x)         |     | 0.00 | 1.00 |      | 1.00  | 1.00 |      |      |      |      |      |      |
| Left-Turn Movement Data       |     |      |      |      |       |      |      |      |      |      |      |      |
| Assigned Mvmt                 |     |      |      | 3    |       | 1    | 5    |      |      |      |      |      |
| Mvmt Sat Flow, veh/h          |     |      |      | 3183 |       | 0    | 1641 |      |      |      |      |      |
| Through Movement Data         |     |      |      |      |       |      |      |      |      |      |      |      |
| Assigned Mvmt                 |     | 2    | 8    |      | 6     |      |      |      |      |      |      |      |
| Mvmt Sat Flow, veh/h          |     | 3647 | 0    |      | 5274  |      |      |      |      |      |      |      |
| Right-Turn Movement Data      |     |      |      |      |       |      |      |      |      |      |      |      |
| Assigned Mvmt                 |     | 12   | 18   |      | 16    |      |      |      |      |      |      |      |
| Mvmt Sat Flow, veh/h          |     | 0    | 2569 |      | 1460  |      |      |      |      |      |      |      |
| Left Lane Group Data          |     |      |      |      |       |      |      |      |      |      |      |      |
| Assigned Mvmt                 | 0   | 0    | 3    | 0    | 1     | 5    | 0    | 0    |      |      |      |      |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

PM 2044+Project  
07/16/2024

| Lane Assignment                     | L    |      |      |      | L (Prot) |      |      |      |
|-------------------------------------|------|------|------|------|----------|------|------|------|
| Lanes in Grp                        | 0    | 0    | 2    | 0    | 0        | 1    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 287  | 0    | 0        | 48   | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 1591 | 0    | 0        | 1641 | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 7.4  | 0.0  | 0.0      | 2.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 7.4  | 0.0  | 0.0      | 2.0  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 1591 | 0    | 0        | 0    | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0        | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 0.0  | 0.0  | 0.0  | 58.0     | 0.0  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 1.00 | 0.00 | 0.00     | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 911  | 0    | 0        | 306  | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.31 | 0.00 | 0.00     | 0.16 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 921  | 0    | 0        | 306  | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00     | 0.73 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 29.1 | 0.0  | 0.0      | 27.1 | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.2  | 0.0  | 0.0      | 0.2  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 29.3 | 0.0  | 0.0      | 27.3 | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 2.6  | 0.0  | 0.0      | 0.7  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 0.00 | 1.00 | 0.00 | 1.00     | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 2.6  | 0.0  | 0.0      | 0.8  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.25 | 0.00 | 0.00     | 0.05 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0        | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 8    | 0    | 6    | 0    | 0    | 0    |
| Lane Assignment             | T    |      |      |      | T    |      |      |      |
| Lanes in Grp                | 0    | 2    | 0    | 0    | 3    | 0    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 1627 | 0    | 0    | 1936 | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1777 | 0    | 0    | 1702 | 0    | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 28.1 | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 28.1 | 0.0  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 2833 | 0    | 0    | 2848 | 0    | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.57 | 0.00 | 0.00 | 0.68 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 2833 | 0    | 0    | 2848 | 0    | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.73 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 16.4 | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.6  | 0.0  | 0.0  | 1.3  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.6  | 0.0  | 0.0  | 17.7 | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 9.1  | 0.0  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

PM 2044+Project  
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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.2  | 0.0  | 0.0  | 0.4  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.2  | 0.0  | 0.0  | 9.4  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.01 | 0.00 | 0.00 | 0.07 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 18   | 0    | 16   | 0    | 0    | 0    |
| Lane Assignment                  |      |      | R    |      | R    |      |      |      |
| Lanes in Grp                     | 0    | 0    | 2    | 0    | 1    | 0    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 0    | 691  | 0    | 888  | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 0    | 1285 | 0    | 1460 | 0    | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 0.0  | 27.3 | 0.0  | 58.0 | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 0.0  | 27.3 | 0.0  | 58.0 | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 0    | 736  | 0    | 814  | 0    | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.00 | 0.94 | 0.00 | 1.09 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 0    | 744  | 0    | 814  | 0    | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 0.0  | 36.2 | 0.0  | 23.0 | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.0  | 19.6 | 0.0  | 59.1 | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 0.0  | 55.8 | 0.0  | 82.1 | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.0  | 7.9  | 0.0  | 16.1 | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.0  | 2.0  | 0.0  | 13.4 | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.0  | 9.9  | 0.0  | 29.5 | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.00 | 0.60 | 0.00 | 5.99 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 18.5 | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  | 0.0  |

### Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 28.6 |
| HCM 7th LOS                  | C    |

### Notes

\* HCM 7th Edition computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 7th Signalized Intersection Capacity Analysis

## 2: 12th Ave & SR 198 WB EB Ramps

PM 2044+Project  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |  |                                                                                     |                                                                                     |  |  |
| Traffic Volume (veh/h)        | 613                                                                               | 0                                                                                 | 48                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 958                                                                                 | 208                                                                                 | 0                                                                                   | 1322                                                                                | 0                                                                                   |
| Future Volume (veh/h)         | 613                                                                               | 0                                                                                 | 48                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 958                                                                                 | 208                                                                                 | 0                                                                                   | 1322                                                                                | 0                                                                                   |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                |                                                                                   |                                                                                   |                                                                                   | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 0                                                                                 | 1723                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1870                                                                                | 1723                                                                                | 0                                                                                   | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 666                                                                               | 0                                                                                 | 52                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1041                                                                                | 226                                                                                 | 0                                                                                   | 1437                                                                                | 0                                                                                   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 0                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Cap, veh/h                    | 767                                                                               | 0                                                                                 | 352                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1984                                                                                | 429                                                                                 | 0                                                                                   | 2427                                                                                | 997                                                                                 |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 2.00                                                                                | 2.00                                                                                |
| Prop Arrive On Green          | 0.24                                                                              | 0.00                                                                              | 0.24                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 0.68                                                                                | 0.67                                                                                | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 45.1                                                                              | 0.0                                                                               | 31.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 8.9                                                                                 | 9.1                                                                                 | 0.0                                                                                 | 0.8                                                                                 | 0.0                                                                                 |
| Ln Grp LOS                    | D                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     | A                                                                                   | A                                                                                   |                                                                                     | A                                                                                   |                                                                                     |
| Approach Vol, veh/h           | 718                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 1267                                                                                |                                                                                     |                                                                                     | 1437                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh         | 44.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 9.0                                                                                 |                                                                                     |                                                                                     | 0.8                                                                                 |                                                                                     |                                                                                     |
| Approach LOS                  | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Timer:                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       | 8.0                                                                               |                                                                                   | 9.0                                                                               |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 75.0                                                                              |                                                                                   | 29.0                                                                              |                                                                                   | 75.0                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | 5.5                                                                               |                                                                                   | 4.0                                                                               |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           | 63.5                                                                              |                                                                                   | 31.0                                                                              |                                                                                   | 63.5                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    | 4.1                                                                               |                                                                                   | 4.1                                                                               |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       | 20.7                                                                              |                                                                                   | 22.9                                                                              |                                                                                   | 2.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       | 6.0                                                                               |                                                                                   | 2.1                                                                               |                                                                                   | 8.8                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         | 0.01                                                                              |                                                                                   | 0.29                                                                              |                                                                                   | 0.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 5                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 1                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 0                                                                                 |                                                                                   | 3183                                                                              |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 2999                                                                              |                                                                                   | 0                                                                                 |                                                                                   | 3647                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 12                                                                                |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 629                                                                               |                                                                                   | 1460                                                                              |                                                                                   | 1460                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 2: 12th Ave & SR 198 WB EB Ramps

PM 2044+Project  
07/16/2024

|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     | L    |      |      |      |      |      |      |      |
| Lanes in Grp                        | 0    | 0    | 0    | 2    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 0    | 666  | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 0    | 1591 | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.0  | 20.9 | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.0  | 20.9 | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 0    | 1591 | 0    | 0    | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 71.0 | 0.0  | 0.0  | 0.0  | 71.0 | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 0    | 767  | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.00 | 0.87 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 0    | 952  | 0    | 0    | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 0.0  | 37.9 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.0  | 7.3  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 0.0  | 45.1 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.0  | 7.5  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.0  | 8.3  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.00 | 0.42 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 0    |
| Lane Assignment             | T    |      |      |      | T    |      |      |      |
| Lanes in Grp                | 0    | 1    | 0    | 0    | 0    | 2    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 635  | 0    | 0    | 0    | 1437 | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1777 | 0    | 0    | 0    | 1777 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 18.4 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 18.4 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 1213 | 0    | 0    | 0    | 2427 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.52 | 0.00 | 0.00 | 0.00 | 0.59 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 1213 | 0    | 0    | 0    | 2427 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.45 | 0.00 | 0.00 | 0.00 | 0.75 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 8.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.7  | 0.0  | 0.0  | 0.0  | 0.8  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 8.9  | 0.0  | 0.0  | 0.0  | 0.8  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 5.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

## HCM 7th Signalized Intersection Capacity Analysis

### 2: 12th Ave & SR 198 WB EB Ramps

PM 2044+Project

07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 5.3  | 0.0  | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.09 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

#### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      | R    |      |      |      |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 632  | 0    | 52   | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1757 | 0    | 1460 | 0    | 1460 | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 18.7 | 0.0  | 2.9  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 18.7 | 0.0  | 2.9  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.36 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1200 | 0    | 352  | 0    | 997  | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.53 | 0.00 | 0.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1200 | 0    | 437  | 0    | 997  | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 0.45 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 8.3  | 0.0  | 31.1 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.7  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 9.1  | 0.0  | 31.2 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 5.2  | 0.0  | 1.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 5.5  | 0.0  | 1.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.10 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

#### Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 12.9 |
| HCM 7th LOS                  | B    |

| Intersection                  |         |        |         |        |         |         |        |
|-------------------------------|---------|--------|---------|--------|---------|---------|--------|
| Intersection Delay, s/veh 6.3 |         |        |         |        |         |         |        |
| Intersection LOS A            |         |        |         |        |         |         |        |
| Approach                      | EB      |        | WB      |        | NB      |         | SB     |
| Entry Lanes                   | 1       |        | 1       |        | 1       |         | 1      |
| Conflicting Circle Lanes      | 1       |        | 1       |        | 1       |         | 1      |
| Adj Approach Flow, veh/h      | 707     |        | 707     |        | 0       |         | 440    |
| Demand Flow Rate, veh/h       | 721     |        | 722     |        | 0       |         | 448    |
| Vehicles Circulating, veh/h   | 745     |        | 114     |        | 354     |         | 487    |
| Vehicles Exiting, veh/h       | 181     |        | 240     |        | 673     |         | 114    |
| Ped Vol Crossing Leg, #/h     | 0       |        | 0       |        | 0       |         | 0      |
| Ped Cap Adj                   | 1.000   |        | 1.000   |        | 1.000   |         | 1.000  |
| Approach Delay, s/veh         | 4.8     |        | 4.7     |        | 0.0     |         | 11.4   |
| Approach LOS                  | A       |        | A       |        | -       |         | B      |
| Lane                          | Left    | Bypass | Left    | Bypass | Left    | Left    | Bypass |
| Designated Moves              | LT      | R      | LT      | R      | LTR     | LT      | R      |
| Assumed Moves                 | LT      |        | LT      |        | LTR     | LT      |        |
| RT Channelized                |         | Free   |         | Free   |         |         | Free   |
| Lane Util                     | 1.000   |        | 1.000   |        | 1.000   | 1.000   |        |
| Follow-Up Headway, s          | 2.609   |        | 2.609   |        | 2.609   | 2.609   |        |
| Critical Headway, s           | 4.976   |        | 4.976   |        | 4.976   | 4.976   |        |
| A (Intercept)                 | 1380    |        | 1380    |        | 1380    | 1380    |        |
| B (Slope)                     | 1.02e-3 |        | 1.02e-3 |        | 1.02e-3 | 1.02e-3 |        |
| Entry Flow, veh/h             | 282     | 439    | 487     | 235    | 0       | 439     | 9      |
| Cap Entry Lane, veh/h         | 645     | 1938   | 1228    | 1938   | 962     | 840     | 1938   |
| Entry HV Adj Factor           | 0.981   | 0.980  | 0.980   | 0.980  | 1.000   | 0.981   | 0.980  |
| Flow Entry, veh/h             | 277     | 430    | 477     | 230    | 0       | 431     | 9      |
| Cap Entry, veh/h              | 633     | 1900   | 1204    | 1900   | 962     | 824     | 1900   |
| V/C Ratio                     | 0.437   | 0.226  | 0.396   | 0.121  | 0.000   | 0.523   | 0.005  |
| Control Delay, s/veh          | 12.2    | 0.0    | 6.9     | 0.0    | 3.7     | 11.7    | 0.0    |
| LOS                           | B       | A      | A       | A      | A       | B       | A      |
| 95th %tile Queue, veh         | 2       | 1      | 2       | 0      | 0       | 3       | 0      |



# HCM 7th Signalized Intersection Capacity Analysis 4: SR 198 EB Ramps & Hanford Armona Rd

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|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)        | 383                                                                               | 20                                                                                | 248                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 366                                                                                 | 108                                                                                 | 203                                                                                 | 274                                                                                 | 0                                                                                   |
| Future Volume (veh/h)         | 383                                                                               | 20                                                                                | 248                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 366                                                                                 | 108                                                                                 | 203                                                                                 | 274                                                                                 | 0                                                                                   |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                |                                                                                   |                                                                                   |                                                                                   | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 0                                                                                   |
| Adj Flow Rate, veh/h          | 416                                                                               | 22                                                                                | 270                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 398                                                                                 | 117                                                                                 | 221                                                                                 | 298                                                                                 | 0                                                                                   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |                                                                                     | Yes                                                                                 |
| Cap, veh/h                    | 488                                                                               | 0                                                                                 | 435                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 801                                                                                 | 235                                                                                 | 300                                                                                 | 373                                                                                 | 0                                                                                   |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Prop Arrive On Green          | 0.30                                                                              | 0.30                                                                              | 0.30                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 0.58                                                                                | 0.55                                                                                | 0.58                                                                                | 0.58                                                                                | 0.00                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 30.0                                                                              | 0.0                                                                               | 20.7                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 8.5                                                                                 | 16.1                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Ln Grp LOS                    | C                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     | A                                                                                   | B                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h           | 686                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 515                                                                                 |                                                                                     |                                                                                     | 519                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh         | 26.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 8.5                                                                                 |                                                                                     |                                                                                     | 16.1                                                                                |                                                                                     |                                                                                     |
| Approach LOS                  | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |
| Timer:                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       | 8.0                                                                               |                                                                                   | 9.0                                                                               |                                                                                   | 8.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 40.7                                                                              |                                                                                   | 23.0                                                                              |                                                                                   | 40.7                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | 5.5                                                                               |                                                                                   | 4.1                                                                               |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           | 56.3                                                                              |                                                                                   | 24.1                                                                              |                                                                                   | 56.3                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    | 4.1                                                                               |                                                                                   | 4.2                                                                               |                                                                                   | 4.6                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       | 12.9                                                                              |                                                                                   | 17.2                                                                              |                                                                                   | 32.5                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       | 2.1                                                                               |                                                                                   | 1.7                                                                               |                                                                                   | 2.7                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         | 0.00                                                                              |                                                                                   | 0.46                                                                              |                                                                                   | 0.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 5                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 1                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 0                                                                                 |                                                                                   | 1641                                                                              |                                                                                   | 380                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 1389                                                                              |                                                                                   | 0                                                                                 |                                                                                   | 646                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 12                                                                                |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 408                                                                               |                                                                                   | 1460                                                                              |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 4: SR 198 EB Ramps & Hanford Armona Rd

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|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     |      |      |      | L    |      | L+T  |      |      |
| Lanes in Grp                        | 0    | 0    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 0    | 416  | 0    | 519  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 0    | 1641 | 0    | 1026 | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.0  | 15.2 | 0.0  | 19.6 | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.0  | 15.2 | 0.0  | 30.5 | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 0    | 1641 | 0    | 900  | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 36.7 | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 25.8 | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 19.6 | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 36.7 | 0.0  | 0.0  | 0.0  | 2.6  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 2.6  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.43 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 0    | 488  | 0    | 672  | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.00 | 0.85 | 0.00 | 0.77 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 0    | 623  | 0    | 1092 | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 0.0  | 21.0 | 0.0  | 14.2 | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.0  | 8.9  | 0.0  | 1.9  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 0.0  | 30.0 | 0.0  | 16.1 | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.0  | 4.7  | 0.0  | 4.8  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 1.2  | 0.0  | 0.4  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.0  | 5.9  | 0.0  | 5.1  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.00 | 0.42 | 0.00 | 1.03 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 0    |
| Lane Assignment             |      |      |      |      |      |      |      |      |
| Lanes in Grp                | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

Baseline

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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      |      |      |      |      |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 515  | 0    | 270  | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1797 | 0    | 1460 | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 10.9 | 0.0  | 10.1 | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 10.9 | 0.0  | 10.1 | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.23 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1036 | 0    | 435  | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.50 | 0.00 | 0.62 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1631 | 0    | 555  | 0    | 0    | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 8.1  | 0.0  | 19.3 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.4  | 0.0  | 1.5  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 8.5  | 0.0  | 20.7 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 2.5  | 0.0  | 2.8  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.1  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 2.7  | 0.0  | 3.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.25 | 0.00 | 0.21 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 17.9 |
| HCM 7th LOS                  | B    |

| Intersection               |          |                                                                                   |      |                            |                                                                                   |                                |           |                                                                                   |       |        |                                                                                     |       |
|----------------------------|----------|-----------------------------------------------------------------------------------|------|----------------------------|-----------------------------------------------------------------------------------|--------------------------------|-----------|-----------------------------------------------------------------------------------|-------|--------|-------------------------------------------------------------------------------------|-------|
| Int Delay, s/veh           | 79.3     |                                                                                   |      |                            |                                                                                   |                                |           |                                                                                   |       |        |                                                                                     |       |
| Movement                   | EBL      | EBT                                                                               | EBR  | WBL                        | WBT                                                                               | WBR                            | NBL       | NBT                                                                               | NBR   | SBL    | SBT                                                                                 | SBR   |
| Lane Configurations        |          |  |      |                            |  |                                |           |  |       |        |  |       |
| Traffic Vol, veh/h         | 0        | 768                                                                               | 136  | 43                         | 312                                                                               | 0                              | 181       | 0                                                                                 | 70    | 0      | 0                                                                                   | 0     |
| Future Vol, veh/h          | 0        | 768                                                                               | 136  | 43                         | 312                                                                               | 0                              | 181       | 0                                                                                 | 70    | 0      | 0                                                                                   | 0     |
| Conflicting Peds, #/hr     | 0        | 0                                                                                 | 0    | 0                          | 0                                                                                 | 0                              | 0         | 0                                                                                 | 0     | 0      | 0                                                                                   | 0     |
| Sign Control               | Free     | Free                                                                              | Free | Free                       | Free                                                                              | Free                           | Stop      | Stop                                                                              | Stop  | Stop   | Stop                                                                                | Stop  |
| RT Channelized             | -        | -                                                                                 | None | -                          | -                                                                                 | None                           | -         | -                                                                                 | None  | -      | -                                                                                   | None  |
| Storage Length             | -        | -                                                                                 | -    | -                          | -                                                                                 | -                              | -         | -                                                                                 | -     | -      | -                                                                                   | -     |
| Veh in Median Storage, #   | -        | 0                                                                                 | -    | -                          | 0                                                                                 | -                              | -         | 0                                                                                 | -     | -      | 0                                                                                   | -     |
| Grade, %                   | -        | 0                                                                                 | -    | -                          | 0                                                                                 | -                              | -         | 0                                                                                 | -     | -      | 0                                                                                   | -     |
| Peak Hour Factor           | 92       | 92                                                                                | 92   | 92                         | 92                                                                                | 92                             | 92        | 92                                                                                | 92    | 92     | 92                                                                                  | 92    |
| Heavy Vehicles, %          | 2        | 2                                                                                 | 2    | 2                          | 2                                                                                 | 2                              | 2         | 2                                                                                 | 2     | 2      | 2                                                                                   | 2     |
| Mvmt Flow                  | 0        | 835                                                                               | 148  | 47                         | 339                                                                               | 0                              | 197       | 0                                                                                 | 76    | 0      | 0                                                                                   | 0     |
|                            |          |                                                                                   |      |                            |                                                                                   |                                |           |                                                                                   |       |        |                                                                                     |       |
| Major/Minor                | Major1   |                                                                                   |      | Major2                     |                                                                                   |                                | Minor1    |                                                                                   |       | Minor2 |                                                                                     |       |
| Conflicting Flow All       | 339      | 0                                                                                 | 0    | 983                        | 0                                                                                 | 0                              | 1341      | 1341                                                                              | 909   | 1267   | 1415                                                                                | 339   |
| Stage 1                    | -        | -                                                                                 | -    | -                          | -                                                                                 | -                              | 909       | 909                                                                               | -     | 433    | 433                                                                                 | -     |
| Stage 2                    | -        | -                                                                                 | -    | -                          | -                                                                                 | -                              | 433       | 433                                                                               | -     | 835    | 983                                                                                 | -     |
| Critical Hdwy              | 4.12     | -                                                                                 | -    | 4.12                       | -                                                                                 | -                              | 7.12      | 6.52                                                                              | 6.22  | 7.12   | 6.52                                                                                | 6.22  |
| Critical Hdwy Stg 1        | -        | -                                                                                 | -    | -                          | -                                                                                 | -                              | 6.12      | 5.52                                                                              | -     | 6.12   | 5.52                                                                                | -     |
| Critical Hdwy Stg 2        | -        | -                                                                                 | -    | -                          | -                                                                                 | -                              | 6.12      | 5.52                                                                              | -     | 6.12   | 5.52                                                                                | -     |
| Follow-up Hdwy             | 2.218    | -                                                                                 | -    | 2.218                      | -                                                                                 | -                              | 3.518     | 4.018                                                                             | 3.318 | 3.518  | 4.018                                                                               | 3.318 |
| Pot Cap-1 Maneuver         | 1220     | -                                                                                 | -    | 703                        | -                                                                                 | -                              | ~ 129     | 152                                                                               | 333   | 146    | 137                                                                                 | 703   |
| Stage 1                    | -        | -                                                                                 | -    | -                          | -                                                                                 | -                              | 329       | 354                                                                               | -     | 601    | 582                                                                                 | -     |
| Stage 2                    | -        | -                                                                                 | -    | -                          | -                                                                                 | -                              | 601       | 582                                                                               | -     | 362    | 327                                                                                 | -     |
| Platoon blocked, %         |          | -                                                                                 | -    |                            | -                                                                                 | -                              |           |                                                                                   |       |        |                                                                                     |       |
| Mov Cap-1 Maneuver         | 1220     | -                                                                                 | -    | 703                        | -                                                                                 | -                              | ~ 119     | 140                                                                               | 333   | 103    | 126                                                                                 | 703   |
| Mov Cap-2 Maneuver         | -        | -                                                                                 | -    | -                          | -                                                                                 | -                              | ~ 119     | 140                                                                               | -     | 103    | 126                                                                                 | -     |
| Stage 1                    | -        | -                                                                                 | -    | -                          | -                                                                                 | -                              | 329       | 354                                                                               | -     | 552    | 534                                                                                 | -     |
| Stage 2                    | -        | -                                                                                 | -    | -                          | -                                                                                 | -                              | 552       | 534                                                                               | -     | 279    | 327                                                                                 | -     |
|                            |          |                                                                                   |      |                            |                                                                                   |                                |           |                                                                                   |       |        |                                                                                     |       |
| Approach                   | EB       |                                                                                   |      | WB                         |                                                                                   |                                | NB        |                                                                                   |       | SB     |                                                                                     |       |
| HCM Control Delay, s/v     | 0        |                                                                                   |      | 1.27                       |                                                                                   |                                | \$ 475.29 |                                                                                   |       | 0      |                                                                                     |       |
| HCM LOS                    |          |                                                                                   |      |                            |                                                                                   |                                | F         |                                                                                   |       | A      |                                                                                     |       |
|                            |          |                                                                                   |      |                            |                                                                                   |                                |           |                                                                                   |       |        |                                                                                     |       |
| Minor Lane/Major Mvmt      | NBLn1    | EBL                                                                               | EBT  | EBR                        | WBL                                                                               | WBT                            | WBR       | SBLn1                                                                             |       |        |                                                                                     |       |
| Capacity (veh/h)           | 145      | 1220                                                                              | -    | -                          | 218                                                                               | -                              | -         | -                                                                                 |       |        |                                                                                     |       |
| HCM Lane V/C Ratio         | 1.885    | -                                                                                 | -    | -                          | 0.067                                                                             | -                              | -         | -                                                                                 |       |        |                                                                                     |       |
| HCM Control Delay (s/veh)  | \$ 475.3 | 0                                                                                 | -    | -                          | 10.5                                                                              | 0                              | -         | 0                                                                                 |       |        |                                                                                     |       |
| HCM Lane LOS               | F        | A                                                                                 | -    | -                          | B                                                                                 | A                              | -         | A                                                                                 |       |        |                                                                                     |       |
| HCM 95th %tile Q(veh)      | 20.9     | 0                                                                                 | -    | -                          | 0.2                                                                               | -                              | -         | -                                                                                 |       |        |                                                                                     |       |
| Notes                      |          |                                                                                   |      |                            |                                                                                   |                                |           |                                                                                   |       |        |                                                                                     |       |
| ~: Volume exceeds capacity |          | \$: Delay exceeds 300s                                                            |      | +: Computation Not Defined |                                                                                   | *: All major volume in platoon |           |                                                                                   |       |        |                                                                                     |       |

# HCM 7th Signalized Intersection Capacity Analysis

## 6: 12th Ave & Hanford Armona Rd

PM 2044+Project  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |  |  |  |  |  |   |  |  |  |  |  |
| Traffic Volume (veh/h)        | 212                                                                               | 405                                                                               | 82                                                                                | 51                                                                                | 412                                                                               | 349                                                                               | 94                                                                                  | 447                                                                                 | 54                                                                                  | 392                                                                                 | 491                                                                                 | 280                                                                                 |
| Future Volume (veh/h)         | 212                                                                               | 405                                                                               | 82                                                                                | 51                                                                                | 412                                                                               | 349                                                                               | 94                                                                                  | 447                                                                                 | 54                                                                                  | 392                                                                                 | 491                                                                                 | 280                                                                                 |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                                | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 230                                                                               | 440                                                                               | 89                                                                                | 55                                                                                | 448                                                                               | 379                                                                               | 102                                                                                 | 486                                                                                 | 59                                                                                  | 426                                                                                 | 534                                                                                 | 304                                                                                 |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Cap, veh/h                    | 234                                                                               | 658                                                                               | 513                                                                               | 89                                                                                | 492                                                                               | 384                                                                               | 144                                                                                 | 564                                                                                 | 68                                                                                  | 466                                                                                 | 815                                                                                 | 463                                                                                 |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Prop Arrive On Green          | 0.14                                                                              | 0.35                                                                              | 0.35                                                                              | 0.05                                                                              | 0.26                                                                              | 0.26                                                                              | 0.09                                                                                | 0.18                                                                                | 0.16                                                                                | 0.28                                                                                | 0.37                                                                                | 0.36                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 105.4                                                                             | 38.3                                                                              | 27.6                                                                              | 64.6                                                                              | 63.2                                                                              | 49.1                                                                              | 59.7                                                                                | 67.4                                                                                | 68.2                                                                                | 58.4                                                                                | 33.0                                                                                | 33.7                                                                                |
| Ln Grp LOS                    | F                                                                                 | D                                                                                 | C                                                                                 | E                                                                                 | E                                                                                 | D                                                                                 | E                                                                                   | E                                                                                   | E                                                                                   | E                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h           |                                                                                   | 759                                                                               |                                                                                   |                                                                                   | 882                                                                               |                                                                                   |                                                                                     | 647                                                                                 |                                                                                     |                                                                                     | 1264                                                                                |                                                                                     |
| Approach Delay, s/veh         |                                                                                   | 57.4                                                                              |                                                                                   |                                                                                   | 57.3                                                                              |                                                                                   |                                                                                     | 66.5                                                                                |                                                                                     |                                                                                     | 41.8                                                                                |                                                                                     |
| Approach LOS                  |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                     | E                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer:                        |                                                                                   | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                   | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  |                                                                                   | 2                                                                                 | 1                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                   | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Case No                       |                                                                                   | 4.0                                                                               | 2.0                                                                               | 2.0                                                                               | 3.0                                                                               | 2.0                                                                               | 4.0                                                                                 | 2.0                                                                                 | 3.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      |                                                                                   | 25.2                                                                              | 38.1                                                                              | 10.5                                                                              | 46.2                                                                              | 14.5                                                                              | 48.8                                                                                | 21.1                                                                                | 35.6                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       |                                                                                   | * 5.5                                                                             | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                                 | 5.5                                                                                 | 5.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           |                                                                                   | * 20                                                                              | 35.0                                                                              | 5.4                                                                               | 39.4                                                                              | 13.0                                                                              | 40.2                                                                                | 15.6                                                                                | 29.2                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    |                                                                                   | 4.0                                                                               | 4.1                                                                               | 4.1                                                                               | 4.0                                                                               | 4.1                                                                               | 4.1                                                                                 | 4.1                                                                                 | 4.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       |                                                                                   | 19.8                                                                              | 32.1                                                                              | 5.9                                                                               | 25.9                                                                              | 9.3                                                                               | 26.6                                                                                | 18.8                                                                                | 29.8                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       |                                                                                   | 0.0                                                                               | 0.5                                                                               | 0.0                                                                               | 1.7                                                                               | 0.1                                                                               | 2.9                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        |                                                                                   | 1.00                                                                              | 1.00                                                                              | 0.84                                                                              | 1.00                                                                              | 0.97                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.11                                                                                | 1.00                                                                                | 0.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 1                                                                                 | 3                                                                                 |                                                                                   | 5                                                                                 |                                                                                     | 7                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 1641                                                                              | 1641                                                                              |                                                                                   | 1641                                                                              |                                                                                     | 1641                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                   |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 3192                                                                              |                                                                                   |                                                                                   | 1870                                                                              |                                                                                   | 2183                                                                                |                                                                                     | 1870                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 12                                                                                |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                  |                                                                                     | 18                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 386                                                                               |                                                                                   | 1460                                                                              |                                                                                   | 1241                                                                                |                                                                                     | 1460                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 0                                                                                 | 1                                                                                 | 3                                                                                 | 0                                                                                 | 5                                                                                 | 0                                                                                   | 7                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 6: 12th Ave & Hanford Armona Rd

PM 2044+Project  
07/16/2024

| Lane Assignment                     | L (Prot) |      | L (Prot) |      | L (Prot) |      | L (Prot) |      |
|-------------------------------------|----------|------|----------|------|----------|------|----------|------|
| Lanes in Grp                        | 0        | 1    | 1        | 0    | 1        | 0    | 1        | 0    |
| Grp Vol (v), veh/h                  | 0        | 426  | 55       | 0    | 102      | 0    | 230      | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0        | 1641 | 1641     | 0    | 1641     | 0    | 1641     | 0    |
| Q Serve Time (g_s), s               | 0.0      | 30.1 | 3.9      | 0.0  | 7.3      | 0.0  | 16.8     | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0      | 30.1 | 3.9      | 0.0  | 7.3      | 0.0  | 16.8     | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0        | 0    | 0        | 0    | 0        | 0    | 0        | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0        | 0    | 0        | 0    | 0        | 0    | 0        | 0    |
| Perm LT Eff Green (g_p), s          | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Time to First Blk (g_f), s          | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00     | 1.00 | 1.00     | 0.00 | 1.00     | 0.00 | 1.00     | 0.00 |
| Lane Grp Cap (c), veh/h             | 0        | 466  | 89       | 0    | 144      | 0    | 234      | 0    |
| V/C Ratio (X)                       | 0.00     | 0.91 | 0.62     | 0.00 | 0.71     | 0.00 | 0.98     | 0.00 |
| Avail Cap (c_a), veh/h              | 0        | 499  | 94       | 0    | 198      | 0    | 234      | 0    |
| Upstream Filter (I)                 | 0.00     | 0.77 | 0.83     | 0.00 | 0.93     | 0.00 | 1.00     | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0      | 41.5 | 55.5     | 0.0  | 53.2     | 0.0  | 51.3     | 0.0  |
| Incr Delay (d2), s/veh              | 0.0      | 16.8 | 9.0      | 0.0  | 6.4      | 0.0  | 54.1     | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Control Delay (d), s/veh            | 0.0      | 58.4 | 64.6     | 0.0  | 59.7     | 0.0  | 105.4    | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0      | 11.4 | 1.6      | 0.0  | 2.9      | 0.0  | 6.6      | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0      | 2.2  | 0.2      | 0.0  | 0.3      | 0.0  | 3.5      | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00     | 1.00 | 1.00     | 0.00 | 1.00     | 0.00 | 1.00     | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0      | 13.6 | 1.8      | 0.0  | 3.1      | 0.0  | 10.1     | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00     | 1.73 | 0.91     | 0.00 | 0.40     | 0.00 | 1.71     | 0.00 |
| Initial Q (Qb), veh                 | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Sat Delay (ds), s/veh               | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Sat Q (Qs), veh                     | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Sat Cap (cs), veh/h                 | 0        | 0    | 0        | 0    | 0        | 0    | 0        | 0    |
| Initial Q Clear Time (tc), h        | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 2    | 0    | 0    | 4    | 0    | 6    | 0    | 8    |
| Lane Assignment             | T    |      |      | T    |      | T    |      | T    |
| Lanes in Grp                | 1    | 0    | 0    | 1    | 0    | 1    | 0    | 1    |
| Grp Vol (v), veh/h          | 270  | 0    | 0    | 440  | 0    | 434  | 0    | 448  |
| Grp Sat Flow (s), veh/h/ln  | 1777 | 0    | 0    | 1870 | 0    | 1777 | 0    | 1870 |
| Q Serve Time (g_s), s       | 17.7 | 0.0  | 0.0  | 23.9 | 0.0  | 24.3 | 0.0  | 27.8 |
| Cycle Q Clear Time (g_c), s | 17.7 | 0.0  | 0.0  | 23.9 | 0.0  | 24.3 | 0.0  | 27.8 |
| Lane Grp Cap (c), veh/h     | 314  | 0    | 0    | 658  | 0    | 663  | 0    | 492  |
| V/C Ratio (X)               | 0.86 | 0.00 | 0.00 | 0.67 | 0.00 | 0.65 | 0.00 | 0.91 |
| Avail Cap (c_a), veh/h      | 314  | 0    | 0    | 658  | 0    | 663  | 0    | 492  |
| Upstream Filter (I)         | 0.93 | 0.00 | 0.00 | 1.00 | 0.00 | 0.77 | 0.00 | 0.83 |
| Uniform Delay (d1), s/veh   | 48.0 | 0.0  | 0.0  | 33.0 | 0.0  | 31.2 | 0.0  | 42.8 |
| Incr Delay (d2), s/veh      | 19.4 | 0.0  | 0.0  | 5.3  | 0.0  | 1.8  | 0.0  | 20.4 |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 67.4 | 0.0  | 0.0  | 38.3 | 0.0  | 33.0 | 0.0  | 63.2 |
| 1st-Term Q (Q1), veh/ln     | 7.4  | 0.0  | 0.0  | 10.1 | 0.0  | 9.7  | 0.0  | 12.1 |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 6: 12th Ave & Hanford Armona Rd

PM 2044+Project  
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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 1.7  | 0.0  | 0.0  | 1.0  | 0.0  | 0.3  | 0.0  | 2.8  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln | 9.1  | 0.0  | 0.0  | 11.1 | 0.0  | 10.1 | 0.0  | 14.9 |
| %ile Storage Ratio (RQ%)     | 0.08 | 0.00 | 0.00 | 0.05 | 0.00 | 0.18 | 0.00 | 0.07 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 12   | 0    | 0    | 14   | 0    | 16   | 0    | 18   |
| Lane Assignment                  | T+R  |      |      | R    |      | T+R  |      | R    |
| Lanes in Grp                     | 1    | 0    | 0    | 1    | 0    | 1    | 0    | 1    |
| Grp Vol (v), veh/h               | 275  | 0    | 0    | 89   | 0    | 404  | 0    | 379  |
| Grp Sat Flow (s), veh/h/ln       | 1801 | 0    | 0    | 1460 | 0    | 1647 | 0    | 1460 |
| Q Serve Time (g_s), s            | 17.8 | 0.0  | 0.0  | 5.1  | 0.0  | 24.6 | 0.0  | 15.2 |
| Cycle Q Clear Time (g_c), s      | 17.8 | 0.0  | 0.0  | 5.1  | 0.0  | 24.6 | 0.0  | 15.2 |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.21 | 0.00 | 0.00 | 1.00 | 0.00 | 0.75 | 0.00 | 1.00 |
| Lane Grp Cap (c), veh/h          | 318  | 0    | 0    | 513  | 0    | 615  | 0    | 384  |
| V/C Ratio (X)                    | 0.87 | 0.00 | 0.00 | 0.17 | 0.00 | 0.66 | 0.00 | 0.99 |
| Avail Cap (c_a), veh/h           | 318  | 0    | 0    | 513  | 0    | 615  | 0    | 384  |
| Upstream Filter (I)              | 0.93 | 0.00 | 0.00 | 1.00 | 0.00 | 0.77 | 0.00 | 0.83 |
| Uniform Delay (d1), s/veh        | 48.2 | 0.0  | 0.0  | 26.9 | 0.0  | 31.7 | 0.0  | 10.6 |
| Incr Delay (d2), s/veh           | 20.0 | 0.0  | 0.0  | 0.7  | 0.0  | 2.0  | 0.0  | 38.6 |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 68.2 | 0.0  | 0.0  | 27.6 | 0.0  | 33.7 | 0.0  | 49.1 |
| 1st-Term Q (Q1), veh/ln          | 7.6  | 0.0  | 0.0  | 1.7  | 0.0  | 9.2  | 0.0  | 4.1  |
| 2nd-Term Q (Q2), veh/ln          | 1.8  | 0.0  | 0.0  | 0.1  | 0.0  | 0.3  | 0.0  | 4.1  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln     | 9.4  | 0.0  | 0.0  | 1.8  | 0.0  | 9.5  | 0.0  | 8.2  |
| %ile Storage Ratio (RQ%)         | 0.09 | 0.00 | 0.00 | 0.45 | 0.00 | 0.17 | 0.00 | 4.18 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 53.5 |
| HCM 7th LOS                  | D    |

## Notes

\* HCM 7th Edition computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 7th Signalized Intersection Capacity Analysis

## 7: 11th Ave & Hanford Armona Rd

PM 2044+Project  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |  |  |  |  |                                                                                   |   |  |  |  |  |  |
| Traffic Volume (veh/h)        | 291                                                                               | 445                                                                               | 76                                                                                | 109                                                                               | 337                                                                               | 119                                                                               | 108                                                                                 | 520                                                                                 | 109                                                                                 | 163                                                                                 | 484                                                                                 | 347                                                                                 |
| Future Volume (veh/h)         | 291                                                                               | 445                                                                               | 76                                                                                | 109                                                                               | 337                                                                               | 119                                                                               | 108                                                                                 | 520                                                                                 | 109                                                                                 | 163                                                                                 | 484                                                                                 | 347                                                                                 |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                                | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 316                                                                               | 484                                                                               | 83                                                                                | 118                                                                               | 366                                                                               | 129                                                                               | 117                                                                                 | 565                                                                                 | 118                                                                                 | 177                                                                                 | 526                                                                                 | 377                                                                                 |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Cap, veh/h                    | 361                                                                               | 977                                                                               | 762                                                                               | 356                                                                               | 690                                                                               | 243                                                                               | 165                                                                                 | 727                                                                                 | 568                                                                                 | 167                                                                                 | 727                                                                                 | 568                                                                                 |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Prop Arrive On Green          | 0.52                                                                              | 0.52                                                                              | 0.52                                                                              | 0.52                                                                              | 0.52                                                                              | 0.51                                                                              | 0.39                                                                                | 0.39                                                                                | 0.39                                                                                | 0.39                                                                                | 0.39                                                                                | 0.39                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 52.1                                                                              | 14.2                                                                              | 11.0                                                                              | 22.6                                                                              | 0.0                                                                               | 14.9                                                                              | 53.2                                                                                | 29.4                                                                                | 18.5                                                                                | 128.8                                                                               | 26.9                                                                                | 25.6                                                                                |
| Ln Grp LOS                    | D                                                                                 | B                                                                                 | B                                                                                 | C                                                                                 |                                                                                   | B                                                                                 | D                                                                                   | C                                                                                   | B                                                                                   | F                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h           | 883                                                                               |                                                                                   |                                                                                   |                                                                                   | 613                                                                               |                                                                                   | 800                                                                                 |                                                                                     |                                                                                     |                                                                                     | 1080                                                                                |                                                                                     |
| Approach Delay, s/veh         | 27.5                                                                              |                                                                                   |                                                                                   |                                                                                   | 16.4                                                                              |                                                                                   | 31.3                                                                                |                                                                                     |                                                                                     |                                                                                     | 43.2                                                                                |                                                                                     |
| Approach LOS                  | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   | C                                                                                   |                                                                                     |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer:                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                               | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       | 5.0                                                                               |                                                                                   | 5.0                                                                               |                                                                                   | 5.0                                                                               |                                                                                   | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 39.0                                                                              |                                                                                   | 51.0                                                                              |                                                                                   | 39.0                                                                              |                                                                                   | 51.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | 5.5                                                                               |                                                                                   | 5.5                                                                               |                                                                                   | 5.5                                                                               |                                                                                   | 5.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           | 33.5                                                                              |                                                                                   | 45.5                                                                              |                                                                                   | 33.5                                                                              |                                                                                   | 45.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    | 4.6                                                                               |                                                                                   | 4.7                                                                               |                                                                                   | 4.5                                                                               |                                                                                   | 4.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       | 37.0                                                                              |                                                                                   | 49.0                                                                              |                                                                                   | 37.0                                                                              |                                                                                   | 27.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       | 0.0                                                                               |                                                                                   | 0.0                                                                               |                                                                                   | 0.0                                                                               |                                                                                   | 2.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   | 0.02                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 5                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 1                                                                                 |                                                                                   | 3                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 568                                                                               |                                                                                   | 831                                                                               |                                                                                   | 698                                                                               |                                                                                   | 778                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 1870                                                                              |                                                                                   | 1870                                                                              |                                                                                   | 1870                                                                              |                                                                                   | 1321                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 12                                                                                |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                |                                                                                   | 18                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 1460                                                                              |                                                                                   | 1460                                                                              |                                                                                   | 1460                                                                              |                                                                                   | 466                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 3                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report



# HCM 7th Signalized Intersection Capacity Analysis

## 7: 11th Ave & Hanford Armona Rd

PM 2044+Project  
07/16/2024

|                                     |      |      |      |      |      |       |      |      |
|-------------------------------------|------|------|------|------|------|-------|------|------|
| Lane Assignment                     |      | L    |      | L    |      | L     |      | L    |
| Lanes in Grp                        | 0    | 1    | 0    | 1    | 0    | 1     | 0    | 1    |
| Grp Vol (v), veh/h                  | 0    | 117  | 0    | 316  | 0    | 177   | 0    | 118  |
| Grp Sat Flow (s), veh/h/ln          | 0    | 568  | 0    | 831  | 0    | 698   | 0    | 778  |
| Q Serve Time (g_s), s               | 0.0  | 13.5 | 0.0  | 30.4 | 0.0  | 11.2  | 0.0  | 10.4 |
| Cycle Q Clear Time (g_c), s         | 0.0  | 35.0 | 0.0  | 47.0 | 0.0  | 35.0  | 0.0  | 25.4 |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 568  | 0    | 831  | 0    | 698   | 0    | 778  |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0     | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 35.0 | 0.0  | 47.0 | 0.0  | 35.0  | 0.0  | 47.0 |
| Perm LT Serve Time (g_u), s         | 0.0  | 13.5 | 0.0  | 30.4 | 0.0  | 11.2  | 0.0  | 32.0 |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 13.5 | 0.0  | 30.4 | 0.0  | 11.2  | 0.0  | 10.4 |
| Time to First Blk (g_f), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00  | 0.00 | 1.00 |
| Lane Grp Cap (c), veh/h             | 0    | 165  | 0    | 361  | 0    | 167   | 0    | 356  |
| V/C Ratio (X)                       | 0.00 | 0.71 | 0.00 | 0.88 | 0.00 | 1.06  | 0.00 | 0.33 |
| Avail Cap (c_a), veh/h              | 0    | 165  | 0    | 361  | 0    | 167   | 0    | 356  |
| Upstream Filter (I)                 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00  | 0.00 | 1.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 40.1 | 0.0  | 31.5 | 0.0  | 42.1  | 0.0  | 22.0 |
| Incr Delay (d2), s/veh              | 0.0  | 13.1 | 0.0  | 20.6 | 0.0  | 86.8  | 0.0  | 0.5  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 53.2 | 0.0  | 52.1 | 0.0  | 128.8 | 0.0  | 22.6 |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 2.5  | 0.0  | 6.4  | 0.0  | 3.5   | 0.0  | 1.7  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.6  | 0.0  | 2.1  | 0.0  | 4.0   | 0.0  | 0.1  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00  | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 3.1  | 0.0  | 8.5  | 0.0  | 7.5   | 0.0  | 1.7  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.70 | 0.00 | 2.15 | 0.00 | 2.73  | 0.00 | 0.44 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 2.5   | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0     | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.3   | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 8    |
| Lane Assignment             |      | T    |      | T    |      | T    |      |      |
| Lanes in Grp                | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 565  | 0    | 484  | 0    | 526  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1870 | 0    | 1870 | 0    | 1870 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 23.8 | 0.0  | 15.0 | 0.0  | 21.5 | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 23.8 | 0.0  | 15.0 | 0.0  | 21.5 | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 727  | 0    | 977  | 0    | 727  | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.78 | 0.00 | 0.50 | 0.00 | 0.72 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 727  | 0    | 977  | 0    | 727  | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 24.1 | 0.0  | 13.9 | 0.0  | 23.4 | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 5.3  | 0.0  | 0.4  | 0.0  | 3.6  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 29.4 | 0.0  | 14.2 | 0.0  | 26.9 | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 9.1  | 0.0  | 5.2  | 0.0  | 8.2  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 7: 11th Ave & Hanford Armona Rd

PM 2044+Project  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 1.1  | 0.0  | 0.1  | 0.0  | 0.7  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 10.2 | 0.0  | 5.3  | 0.0  | 9.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.15 | 0.00 | 0.03 | 0.00 | 0.09 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 18   |
| Lane Assignment                  |      | R    |      | R    |      | R    |      | T+R  |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 1    |
| Grp Vol (v), veh/h               | 0    | 118  | 0    | 83   | 0    | 377  | 0    | 495  |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1460 | 0    | 1460 | 0    | 1460 | 0    | 1787 |
| Q Serve Time (g_s), s            | 0.0  | 4.8  | 0.0  | 2.6  | 0.0  | 19.1 | 0.0  | 16.6 |
| Cycle Q Clear Time (g_c), s      | 0.0  | 4.8  | 0.0  | 2.6  | 0.0  | 19.1 | 0.0  | 16.6 |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.26 |
| Lane Grp Cap (c), veh/h          | 0    | 568  | 0    | 762  | 0    | 568  | 0    | 933  |
| V/C Ratio (X)                    | 0.00 | 0.21 | 0.00 | 0.11 | 0.00 | 0.66 | 0.00 | 0.53 |
| Avail Cap (c_a), veh/h           | 0    | 568  | 0    | 762  | 0    | 568  | 0    | 933  |
| Upstream Filter (I)              | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 18.3 | 0.0  | 10.9 | 0.0  | 22.7 | 0.0  | 14.4 |
| Incr Delay (d2), s/veh           | 0.0  | 0.2  | 0.0  | 0.1  | 0.0  | 2.9  | 0.0  | 0.6  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 18.5 | 0.0  | 11.0 | 0.0  | 25.6 | 0.0  | 14.9 |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 1.4  | 0.0  | 0.7  | 0.0  | 5.7  | 0.0  | 5.5  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.5  | 0.0  | 0.1  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 1.5  | 0.0  | 0.7  | 0.0  | 6.2  | 0.0  | 5.6  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.37 | 0.00 | 0.36 | 0.00 | 0.79 | 0.00 | 0.02 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 31.4 |
| HCM 7th LOS                  | C    |

# HCM 7th Signalized Intersection Capacity Analysis

## 8: 12th Ave & Hume Ave

PM 2044+Project  
07/16/2024

|                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|---|---|
|                               |  |  |  |  |  |  |      |   |   |
| Movement                      | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |      |   |   |
| Lane Configurations           |  |  |  |                                                                                   |  |  |      |   |   |
| Traffic Volume (veh/h)        | 11                                                                                | 173                                                                               | 288                                                                               | 33                                                                                | 365                                                                               | 323                                                                               |      |   |   |
| Future Volume (veh/h)         | 11                                                                                | 173                                                                               | 288                                                                               | 33                                                                                | 365                                                                               | 323                                                                               |      |   |   |
| Number                        | 3                                                                                 | 18                                                                                | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 |      |   |   |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |      |   |   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |      |   |   |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |
| Work Zone On Approach         | No                                                                                |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |      |   |   |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              |      |   |   |
| Adj Flow Rate, veh/h          | 12                                                                                | 188                                                                               | 313                                                                               | 36                                                                                | 397                                                                               | 351                                                                               |      |   |   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |      |   |   |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |      |   |   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |      |   |   |
| Cap, veh/h                    | 240                                                                               | 213                                                                               | 1279                                                                              | 147                                                                               | 758                                                                               | 1453                                                                              |      |   |   |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |
| Prop Arrive On Green          | 0.15                                                                              | 0.15                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              |      |   |   |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |
| Ln Grp Delay, s/veh           | 38.3                                                                              | 71.0                                                                              | 0.0                                                                               | 3.6                                                                               | 8.7                                                                               | 3.5                                                                               |      |   |   |
| Ln Grp LOS                    | D                                                                                 | E                                                                                 |                                                                                   | A                                                                                 | A                                                                                 | A                                                                                 |      |   |   |
| Approach Vol, veh/h           | 200                                                                               |                                                                                   | 349                                                                               |                                                                                   |                                                                                   | 748                                                                               |      |   |   |
| Approach Delay, s/veh         | 69.0                                                                              |                                                                                   | 3.6                                                                               |                                                                                   |                                                                                   | 6.2                                                                               |      |   |   |
| Approach LOS                  | E                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |      |   |   |
| Timer:                        |                                                                                   | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6    | 7 | 8 |
| Assigned Phs                  |                                                                                   |                                                                                   | 2                                                                                 | 8                                                                                 |                                                                                   |                                                                                   | 6    |   |   |
| Case No                       |                                                                                   |                                                                                   | 8.0                                                                               | 9.0                                                                               |                                                                                   |                                                                                   | 6.0  |   |   |
| Phs Duration (G+Y+Rc), s      |                                                                                   |                                                                                   | 84.8                                                                              | 19.2                                                                              |                                                                                   |                                                                                   | 84.8 |   |   |
| Change Period (Y+Rc), s       |                                                                                   |                                                                                   | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                   | 4.0  |   |   |
| Max Green (Gmax), s           |                                                                                   |                                                                                   | 79.0                                                                              | 17.0                                                                              |                                                                                   |                                                                                   | 79.0 |   |   |
| Max Allow Headway (MAH), s    |                                                                                   |                                                                                   | 4.0                                                                               | 4.3                                                                               |                                                                                   |                                                                                   | 4.7  |   |   |
| Max Q Clear (g_c+I1), s       |                                                                                   |                                                                                   | 7.4                                                                               | 15.1                                                                              |                                                                                   |                                                                                   | 28.0 |   |   |
| Green Ext Time (g_e), s       |                                                                                   |                                                                                   | 1.3                                                                               | 0.1                                                                               |                                                                                   |                                                                                   | 4.2  |   |   |
| Prob of Phs Call (p_c)        |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 1.00 |   |   |
| Prob of Max Out (p_x)         |                                                                                   |                                                                                   | 0.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 0.00 |   |   |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 5                                                                                 | 3                                                                                 |                                                                                   |                                                                                   | 1    |   |   |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 0                                                                                 | 1641                                                                              |                                                                                   |                                                                                   | 950  |   |   |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 2                                                                                 | 8                                                                                 |                                                                                   |                                                                                   | 6    |   |   |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 1647                                                                              | 0                                                                                 |                                                                                   |                                                                                   | 1870 |   |   |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 12                                                                                | 18                                                                                |                                                                                   |                                                                                   | 16   |   |   |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 189                                                                               | 1460                                                                              |                                                                                   |                                                                                   | 0    |   |   |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |
| Assigned Mvmt                 |                                                                                   | 0                                                                                 | 5                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 1    | 0 | 0 |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 8: 12th Ave & Hume Ave

PM 2044+Project  
07/16/2024

|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     | L    |      |      |      |      | L    |      |      |
| Lanes in Grp                        | 0    | 0    | 1    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 12   | 0    | 0    | 397  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 1641 | 0    | 0    | 950  | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.7  | 0.0  | 0.0  | 20.6 | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.7  | 0.0  | 0.0  | 26.0 | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 1641 | 0    | 0    | 950  | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 80.8 | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 75.3 | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 20.6 | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 80.8 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 240  | 0    | 0    | 758  | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 | 0.52 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 268  | 0    | 0    | 758  | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.74 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 38.2 | 0.0  | 0.0  | 6.8  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  | 1.9  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 38.3 | 0.0  | 0.0  | 8.7  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  | 2.7  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.4  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  | 3.1  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 | 0.39 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 8    | 0    | 0    | 6    | 0    | 0    |
| Lane Assignment             | T    |      |      |      |      |      |      |      |
| Lanes in Grp                | 0    | 0    | 0    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 0    | 0    | 0    | 0    | 351  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 0    | 0    | 0    | 0    | 1870 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 5.4  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 5.4  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 0    | 0    | 0    | 0    | 1453 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.24 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 0    | 0    | 0    | 0    | 1453 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.74 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 3.2  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 3.5  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 1.1  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 8: 12th Ave & Hume Ave

PM 2044+Project  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 1.2  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 18   | 0    | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      |      |      |      |      |
| Lanes in Grp                     | 0    | 1    | 1    | 0    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 349  | 188  | 0    | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1836 | 1460 | 0    | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 5.4  | 13.1 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 5.4  | 13.1 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.10 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1427 | 213  | 0    | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.24 | 0.88 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1427 | 239  | 0    | 0    | 0    | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 3.2  | 43.5 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.4  | 27.5 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 3.6  | 71.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 1.0  | 4.5  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.2  | 1.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 1.2  | 6.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.02 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 15.2 |
| HCM 7th LOS                  | B    |



# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

AM 2024  
07/16/2024

| Movement                            | EBL | EBT  | EBR  | WBL  | WBT   | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|-------------------------------------|-----|------|------|------|-------|------|------|------|------|------|------|------|
| Lane Configurations                 |     |      |      | ↰    |       | ↰    | ↰    | ↰    |      |      | ↰    | ↰    |
| Traffic Volume (veh/h)              | 0   | 0    | 0    | 45   | 0     | 396  | 29   | 736  | 0    | 0    | 494  | 276  |
| Future Volume (veh/h)               | 0   | 0    | 0    | 45   | 0     | 396  | 29   | 736  | 0    | 0    | 494  | 276  |
| Number                              |     |      |      | 3    | 8     | 18   | 5    | 2    | 12   | 1    | 6    | 16   |
| Initial Q, veh                      |     |      |      | 0    | 0     | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Lane Width Adj.                     |     |      |      | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped-Bike Adj (A <sub>pbT</sub> )    |     |      |      | 1.00 |       | 1.00 | 1.00 |      | 1.00 | 1.00 |      | 1.00 |
| Parking Bus Adj                     |     |      |      | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach               |     |      |      | No   |       |      |      | No   |      |      |      | No   |
| Lanes Open During Work Zone         |     |      |      |      |       |      |      |      |      |      |      |      |
| Adj Sat Flow, veh/h/ln              |     |      |      | 1723 | 0     | 1723 | 1723 | 1870 | 0    | 0    | 1870 | 1723 |
| Adj Flow Rate, veh/h                |     |      |      | 49   | 0     | 430  | 32   | 800  | 0    | 0    | 537  | 300  |
| Peak Hour Factor                    |     |      |      | 0.92 | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, %                |     |      |      | 2    | 0     | 2    | 2    | 2    | 0    | 0    | 2    | 2    |
| Opposing Right Turn Influence       |     |      |      | Yes  |       |      | Yes  |      |      | No   |      |      |
| Cap, veh/h                          |     |      |      | 646  | 0     | 521  | 625  | 2521 | 0    | 0    | 1364 | 390  |
| HCM Platoon Ratio                   |     |      |      | 1.00 | 1.00  | 1.00 | 0.67 | 0.67 | 1.00 | 1.00 | 1.00 | 1.00 |
| Prop Arrive On Green                |     |      |      | 0.20 | 0.00  | 0.20 | 0.26 | 0.48 | 0.00 | 0.00 | 0.27 | 0.27 |
| Unsig. Movement Delay               |     |      |      |      |       |      |      |      |      |      |      |      |
| Ln Grp Delay, s/veh                 |     |      |      | 29.1 | 0.0   | 38.6 | 21.3 | 10.5 | 0.0  | 0.0  | 27.9 | 44.0 |
| Ln Grp LOS                          |     |      |      | C    |       | D    | C    | B    |      |      | C    | D    |
| Approach Vol, veh/h                 |     |      |      | 479  |       |      |      | 832  |      |      |      | 837  |
| Approach Delay, s/veh               |     |      |      | 37.6 |       |      |      | 10.9 |      |      |      | 33.7 |
| Approach LOS                        |     |      |      | D    |       |      |      | B    |      |      |      | C    |
| Timer:                              | 1   | 2    | 3    | 4    | 5     | 6    | 7    | 8    |      |      |      |      |
| Assigned Phs                        |     | 2    | 8    |      | 6     | 5    |      |      |      |      |      |      |
| Case No                             |     | 4.0  | 9.0  |      | 7.0   | 2.0  |      |      |      |      |      |      |
| Phs Duration (G+Y+Rc), s            |     | 67.8 | 22.2 |      | 28.0  | 39.8 |      |      |      |      |      |      |
| Change Period (Y+Rc), s             |     | 5.5  | 4.0  |      | * 5.5 | 5.5  |      |      |      |      |      |      |
| Max Green (Gmax), s                 |     | 52.5 | 28.0 |      | * 39  | 10.0 |      |      |      |      |      |      |
| Max Allow Headway (MAH), s          |     | 4.0  | 4.3  |      | 4.1   | 4.1  |      |      |      |      |      |      |
| Max Q Clear (g <sub>c</sub> +I1), s |     | 14.5 | 16.4 |      | 19.1  | 3.3  |      |      |      |      |      |      |
| Green Ext Time (g <sub>e</sub> ), s |     | 3.7  | 1.7  |      | 3.5   | 0.0  |      |      |      |      |      |      |
| Prob of Phs Call (p <sub>c</sub> )  |     | 1.00 | 1.00 |      | 1.00  | 0.55 |      |      |      |      |      |      |
| Prob of Max Out (p <sub>x</sub> )   |     | 0.00 | 0.05 |      | 0.02  | 0.03 |      |      |      |      |      |      |
| Left-Turn Movement Data             |     |      |      |      |       |      |      |      |      |      |      |      |
| Assigned Mvmt                       |     |      |      | 3    |       | 1    | 5    |      |      |      |      |      |
| Mvmt Sat Flow, veh/h                |     |      |      | 3183 |       | 0    | 1641 |      |      |      |      |      |
| Through Movement Data               |     |      |      |      |       |      |      |      |      |      |      |      |
| Assigned Mvmt                       |     | 2    | 8    |      | 6     |      |      |      |      |      |      |      |
| Mvmt Sat Flow, veh/h                |     | 3647 | 0    |      | 5274  |      |      |      |      |      |      |      |
| Right-Turn Movement Data            |     |      |      |      |       |      |      |      |      |      |      |      |
| Assigned Mvmt                       |     | 12   | 18   |      | 16    |      |      |      |      |      |      |      |
| Mvmt Sat Flow, veh/h                |     | 0    | 2569 |      | 1460  |      |      |      |      |      |      |      |
| Left Lane Group Data                |     |      |      |      |       |      |      |      |      |      |      |      |
| Assigned Mvmt                       | 0   | 0    | 3    | 0    | 1     | 5    | 0    | 0    |      |      |      |      |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

AM 2024  
07/16/2024

| Lane Assignment                     | L    |      |      |      | L (Prot) |      |      |      |
|-------------------------------------|------|------|------|------|----------|------|------|------|
| Lanes in Grp                        | 0    | 0    | 2    | 0    | 0        | 1    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 49   | 0    | 0        | 32   | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 1591 | 0    | 0        | 1641 | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 1.1  | 0.0  | 0.0      | 1.3  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 1.1  | 0.0  | 0.0      | 1.3  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 1591 | 0    | 0        | 0    | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0        | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 0.0  | 0.0  | 0.0  | 24.0     | 0.0  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 1.00 | 0.00 | 0.00     | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 646  | 0    | 0        | 625  | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.08 | 0.00 | 0.00     | 0.05 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 994  | 0    | 0        | 625  | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00     | 0.93 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 29.0 | 0.0  | 0.0      | 21.2 | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 29.1 | 0.0  | 0.0      | 21.3 | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.4  | 0.0  | 0.0      | 0.5  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 0.00 | 1.00 | 0.00 | 1.00     | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.4  | 0.0  | 0.0      | 0.5  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.04 | 0.00 | 0.00     | 0.03 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0        | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 8    | 0    | 6    | 0    | 0    | 0    |
| Lane Assignment             | T    |      |      |      | T    |      |      |      |
| Lanes in Grp                | 0    | 2    | 0    | 0    | 3    | 0    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 800  | 0    | 0    | 537  | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1777 | 0    | 0    | 1702 | 0    | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 12.5 | 0.0  | 0.0  | 7.8  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 12.5 | 0.0  | 0.0  | 7.8  | 0.0  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 2521 | 0    | 0    | 1364 | 0    | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.32 | 0.00 | 0.00 | 0.39 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 2521 | 0    | 0    | 2269 | 0    | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.93 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 10.1 | 0.0  | 0.0  | 27.0 | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.3  | 0.0  | 0.0  | 0.9  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 10.5 | 0.0  | 0.0  | 27.9 | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 4.0  | 0.0  | 0.0  | 2.9  | 0.0  | 0.0  | 0.0  |

Baseline

Synchro 9 Report



# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.1  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 4.1  | 0.0  | 0.0  | 3.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.19 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 18   | 0    | 16   | 0    | 0    | 0    |
| Lane Assignment                  |      |      | R    |      | R    |      |      |      |
| Lanes in Grp                     | 0    | 0    | 2    | 0    | 1    | 0    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 0    | 430  | 0    | 300  | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 0    | 1285 | 0    | 1460 | 0    | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 0.0  | 14.4 | 0.0  | 17.1 | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 0.0  | 14.4 | 0.0  | 17.1 | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 0    | 521  | 0    | 390  | 0    | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.00 | 0.83 | 0.00 | 0.77 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 0    | 802  | 0    | 649  | 0    | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 0.0  | 34.3 | 0.0  | 30.4 | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.0  | 4.2  | 0.0  | 13.6 | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 0.0  | 38.6 | 0.0  | 44.0 | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.0  | 4.1  | 0.0  | 5.4  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.0  | 0.3  | 0.0  | 1.5  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.0  | 4.4  | 0.0  | 6.9  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.00 | 0.27 | 0.00 | 1.40 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 25.7 |
| HCM 7th LOS                  | C    |

### Notes

\* HCM 7th Edition computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 7th Signalized Intersection Capacity Analysis

## 2: 12th Ave & SR 198 WB EB Ramps

AM 2024  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |  |                                                                                     |                                                                                     |  |  |
| Traffic Volume (veh/h)        | 302                                                                               | 0                                                                                 | 18                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 498                                                                                 | 106                                                                                 | 0                                                                                   | 279                                                                                 | 0                                                                                   |
| Future Volume (veh/h)         | 302                                                                               | 0                                                                                 | 18                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 498                                                                                 | 106                                                                                 | 0                                                                                   | 279                                                                                 | 0                                                                                   |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                |                                                                                   |                                                                                   |                                                                                   | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 0                                                                                 | 1723                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1870                                                                                | 1723                                                                                | 0                                                                                   | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 328                                                                               | 0                                                                                 | 20                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 541                                                                                 | 115                                                                                 | 0                                                                                   | 303                                                                                 | 0                                                                                   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 0                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |                                                                                     | No                                                                                  |
| Cap, veh/h                    | 438                                                                               | 0                                                                                 | 201                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2261                                                                                | 479                                                                                 | 0                                                                                   | 2753                                                                                | 1131                                                                                |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 2.00                                                                                | 2.00                                                                                | 1.00                                                                                | 2.00                                                                                | 2.00                                                                                |
| Prop Arrive On Green          | 0.14                                                                              | 0.00                                                                              | 0.14                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 39.9                                                                              | 0.0                                                                               | 34.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 0.4                                                                                 | 0.4                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.0                                                                                 |
| Ln Grp LOS                    | D                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     | A                                                                                   | A                                                                                   |                                                                                     | A                                                                                   |                                                                                     |
| Approach Vol, veh/h           | 348                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 656                                                                                 |                                                                                     |                                                                                     | 303                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh         | 39.6                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.4                                                                                 |                                                                                     |                                                                                     | 0.1                                                                                 |                                                                                     |                                                                                     |
| Approach LOS                  | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Timer:                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       | 8.0                                                                               |                                                                                   | 9.0                                                                               |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 73.7                                                                              |                                                                                   | 16.3                                                                              |                                                                                   | 73.7                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | 5.5                                                                               |                                                                                   | 4.0                                                                               |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           | 48.5                                                                              |                                                                                   | 32.0                                                                              |                                                                                   | 48.5                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    | 4.1                                                                               |                                                                                   | 4.1                                                                               |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       | 2.0                                                                               |                                                                                   | 10.9                                                                              |                                                                                   | 2.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       | 2.5                                                                               |                                                                                   | 1.4                                                                               |                                                                                   | 1.2                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         | 0.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 5                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 1                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 0                                                                                 |                                                                                   | 3183                                                                              |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 3012                                                                              |                                                                                   | 0                                                                                 |                                                                                   | 3647                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 12                                                                                |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 618                                                                               |                                                                                   | 1460                                                                              |                                                                                   | 1460                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 2: 12th Ave & SR 198 WB EB Ramps

AM 2024  
07/16/2024

|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     | L    |      |      |      |      |      |      |      |
| Lanes in Grp                        | 0    | 0    | 0    | 2    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 0    | 328  | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 0    | 1591 | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.0  | 8.9  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.0  | 8.9  | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 0    | 1591 | 0    | 0    | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 69.7 | 0.0  | 0.0  | 0.0  | 69.7 | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 0    | 438  | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.00 | 0.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 0    | 1135 | 0    | 0    | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 0.0  | 37.3 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.0  | 2.6  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 0.0  | 39.9 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.0  | 3.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.0  | 3.4  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.00 | 0.17 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 0    |
| Lane Assignment             | T    |      |      |      | T    |      |      |      |
| Lanes in Grp                | 0    | 1    | 0    | 0    | 0    | 2    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 329  | 0    | 0    | 0    | 303  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1777 | 0    | 0    | 0    | 1777 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 1377 | 0    | 0    | 0    | 2753 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.24 | 0.00 | 0.00 | 0.00 | 0.11 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 1377 | 0    | 0    | 0    | 2753 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.96 | 0.00 | 0.00 | 0.00 | 0.99 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.4  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.4  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

## HCM 7th Signalized Intersection Capacity Analysis

### 2: 12th Ave & SR 198 WB EB Ramps

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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

#### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      | R    |      |      |      |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 327  | 0    | 20   | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1759 | 0    | 1460 | 0    | 1460 | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 0.0  | 0.0  | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 0.0  | 0.0  | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.35 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1363 | 0    | 201  | 0    | 1131 | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.24 | 0.00 | 0.10 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1363 | 0    | 521  | 0    | 1131 | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 0.96 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 0.0  | 0.0  | 33.9 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.4  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 0.4  | 0.0  | 34.2 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.0  | 0.0  | 0.4  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.2  | 0.0  | 0.4  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

#### Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 10.8 |
| HCM 7th LOS                  | B    |

| Intersection                  |         |        |         |        |         |         |        |
|-------------------------------|---------|--------|---------|--------|---------|---------|--------|
| Intersection Delay, s/veh 4.6 |         |        |         |        |         |         |        |
| Intersection LOS A            |         |        |         |        |         |         |        |
| Approach                      | EB      |        | WB      |        | NB      |         | SB     |
| Entry Lanes                   | 1       |        | 1       |        | 1       |         | 1      |
| Conflicting Circle Lanes      | 1       |        | 1       |        | 1       |         | 1      |
| Adj Approach Flow, veh/h      | 410     |        | 375     |        | 0       |         | 208    |
| Demand Flow Rate, veh/h       | 418     |        | 382     |        | 0       |         | 212    |
| Vehicles Circulating, veh/h   | 322     |        | 120     |        | 313     |         | 316    |
| Vehicles Exiting, veh/h       | 204     |        | 193     |        | 281     |         | 120    |
| Ped Vol Crossing Leg, #/h     | 0       |        | 0       |        | 0       |         | 0      |
| Ped Cap Adj                   | 1.000   |        | 1.000   |        | 1.000   |         | 1.000  |
| Approach Delay, s/veh         | 4.2     |        | 4.4     |        | 0.0     |         | 5.6    |
| Approach LOS                  | A       |        | A       |        | -       |         | A      |
| Lane                          | Left    | Bypass | Left    | Bypass | Left    | Left    | Bypass |
| Designated Moves              | LT      | R      | LT      | R      | LTR     | LT      | R      |
| Assumed Moves                 | LT      |        | LT      |        | LTR     | LT      |        |
| RT Channelized                |         | Free   |         | Free   |         |         | Free   |
| Lane Util                     | 1.000   |        | 1.000   |        | 1.000   | 1.000   |        |
| Follow-Up Headway, s          | 2.609   |        | 2.609   |        | 2.609   | 2.609   |        |
| Critical Headway, s           | 4.976   |        | 4.976   |        | 4.976   | 4.976   |        |
| A (Intercept)                 | 1380    |        | 1380    |        | 1380    | 1380    |        |
| B (Slope)                     | 1.02e-3 |        | 1.02e-3 |        | 1.02e-3 | 1.02e-3 |        |
| Entry Flow, veh/h             | 272     | 146    | 316     | 66     | 0       | 210     | 2      |
| Cap Entry Lane, veh/h         | 994     | 1938   | 1221    | 1938   | 1003    | 1000    | 1938   |
| Entry HV Adj Factor           | 0.982   | 0.980  | 0.981   | 0.980  | 1.000   | 0.979   | 0.980  |
| Flow Entry, veh/h             | 267     | 143    | 310     | 65     | 0       | 206     | 2      |
| Cap Entry, veh/h              | 975     | 1900   | 1198    | 1900   | 1003    | 979     | 1900   |
| V/C Ratio                     | 0.274   | 0.075  | 0.259   | 0.034  | 0.000   | 0.210   | 0.001  |
| Control Delay, s/veh          | 6.4     | 0.0    | 5.3     | 0.0    | 3.6     | 5.7     | 0.0    |
| LOS                           | A       | A      | A       | A      | A       | A       | A      |
| 95th %tile Queue, veh         | 1       | 0      | 1       | 0      | 0       | 1       | 0      |

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HCM 7th Edition methodology does not support Non-NEMA phasing.

| Intersection              |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
|---------------------------|--------|-----------------------------------------------------------------------------------|------|--------|-----------------------------------------------------------------------------------|------|--------|-----------------------------------------------------------------------------------|-------|--------|-------------------------------------------------------------------------------------|-------|
| Int Delay, s/veh          | 1.5    |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
| Movement                  | EBL    | EBT                                                                               | EBR  | WBL    | WBT                                                                               | WBR  | NBL    | NBT                                                                               | NBR   | SBL    | SBT                                                                                 | SBR   |
| Lane Configurations       |        |  |      |        |  |      |        |  |       |        |  |       |
| Traffic Vol, veh/h        | 0      | 176                                                                               | 34   | 21     | 277                                                                               | 0    | 37     | 0                                                                                 | 13    | 0      | 0                                                                                   | 0     |
| Future Vol, veh/h         | 0      | 176                                                                               | 34   | 21     | 277                                                                               | 0    | 37     | 0                                                                                 | 13    | 0      | 0                                                                                   | 0     |
| Conflicting Peds, #/hr    | 0      | 0                                                                                 | 0    | 0      | 0                                                                                 | 0    | 0      | 0                                                                                 | 0     | 0      | 0                                                                                   | 0     |
| Sign Control              | Free   | Free                                                                              | Free | Free   | Free                                                                              | Free | Stop   | Stop                                                                              | Stop  | Stop   | Stop                                                                                | Stop  |
| RT Channelized            | -      | -                                                                                 | None | -      | -                                                                                 | None | -      | -                                                                                 | None  | -      | -                                                                                   | None  |
| Storage Length            | -      | -                                                                                 | -    | -      | -                                                                                 | -    | -      | -                                                                                 | -     | -      | -                                                                                   | -     |
| Veh in Median Storage, #  | -      | 0                                                                                 | -    | -      | 0                                                                                 | -    | -      | 0                                                                                 | -     | -      | 0                                                                                   | -     |
| Grade, %                  | -      | 0                                                                                 | -    | -      | 0                                                                                 | -    | -      | 0                                                                                 | -     | -      | 0                                                                                   | -     |
| Peak Hour Factor          | 92     | 92                                                                                | 92   | 92     | 92                                                                                | 92   | 92     | 92                                                                                | 92    | 92     | 92                                                                                  | 92    |
| Heavy Vehicles, %         | 2      | 2                                                                                 | 2    | 2      | 2                                                                                 | 2    | 2      | 2                                                                                 | 2     | 2      | 2                                                                                   | 2     |
| Mvmt Flow                 | 0      | 191                                                                               | 37   | 23     | 301                                                                               | 0    | 40     | 0                                                                                 | 14    | 0      | 0                                                                                   | 0     |
|                           |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
| Major/Minor               | Major1 |                                                                                   |      | Major2 |                                                                                   |      | Minor1 |                                                                                   |       | Minor2 |                                                                                     |       |
| Conflicting Flow All      | 301    | 0                                                                                 | 0    | 228    | 0                                                                                 | 0    | 557    | 557                                                                               | 210   | 538    | 575                                                                                 | 301   |
| Stage 1                   | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 210    | 210                                                                               | -     | 347    | 347                                                                                 | -     |
| Stage 2                   | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 347    | 347                                                                               | -     | 191    | 228                                                                                 | -     |
| Critical Hdwy             | 4.12   | -                                                                                 | -    | 4.12   | -                                                                                 | -    | 7.12   | 6.52                                                                              | 6.22  | 7.12   | 6.52                                                                                | 6.22  |
| Critical Hdwy Stg 1       | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 6.12   | 5.52                                                                              | -     | 6.12   | 5.52                                                                                | -     |
| Critical Hdwy Stg 2       | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 6.12   | 5.52                                                                              | -     | 6.12   | 5.52                                                                                | -     |
| Follow-up Hdwy            | 2.218  | -                                                                                 | -    | 2.218  | -                                                                                 | -    | 3.518  | 4.018                                                                             | 3.318 | 3.518  | 4.018                                                                               | 3.318 |
| Pot Cap-1 Maneuver        | 1260   | -                                                                                 | -    | 1340   | -                                                                                 | -    | 441    | 439                                                                               | 830   | 454    | 429                                                                                 | 739   |
| Stage 1                   | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 792    | 729                                                                               | -     | 669    | 635                                                                                 | -     |
| Stage 2                   | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 669    | 635                                                                               | -     | 810    | 715                                                                                 | -     |
| Platoon blocked, %        |        | -                                                                                 | -    |        | -                                                                                 | -    |        |                                                                                   |       |        |                                                                                     |       |
| Mov Cap-1 Maneuver        | 1260   | -                                                                                 | -    | 1340   | -                                                                                 | -    | 432    | 430                                                                               | 830   | 437    | 420                                                                                 | 739   |
| Mov Cap-2 Maneuver        | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 432    | 430                                                                               | -     | 437    | 420                                                                                 | -     |
| Stage 1                   | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 792    | 729                                                                               | -     | 655    | 622                                                                                 | -     |
| Stage 2                   | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 655    | 622                                                                               | -     | 797    | 715                                                                                 | -     |
|                           |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
| Approach                  | EB     |                                                                                   |      | WB     |                                                                                   |      | NB     |                                                                                   |       | SB     |                                                                                     |       |
| HCM Control Delay, s/v    | 0      |                                                                                   |      | 0.54   |                                                                                   |      | 13.19  |                                                                                   |       | 0      |                                                                                     |       |
| HCM LOS                   |        |                                                                                   |      |        |                                                                                   |      | B      |                                                                                   |       | A      |                                                                                     |       |
|                           |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
| Minor Lane/Major Mvmt     | NBLn1  | EBL                                                                               | EBT  | EBR    | WBL                                                                               | WBT  | WBR    | SBLn1                                                                             |       |        |                                                                                     |       |
| Capacity (veh/h)          | 494    | 1260                                                                              | -    | -      | 127                                                                               | -    | -      | -                                                                                 |       |        |                                                                                     |       |
| HCM Lane V/C Ratio        | 0.11   | -                                                                                 | -    | -      | 0.017                                                                             | -    | -      | -                                                                                 |       |        |                                                                                     |       |
| HCM Control Delay (s/veh) | 13.2   | 0                                                                                 | -    | -      | 7.7                                                                               | 0    | -      | 0                                                                                 |       |        |                                                                                     |       |
| HCM Lane LOS              | B      | A                                                                                 | -    | -      | A                                                                                 | A    | -      | A                                                                                 |       |        |                                                                                     |       |
| HCM 95th %tile Q(veh)     | 0.4    | 0                                                                                 | -    | -      | 0.1                                                                               | -    | -      | -                                                                                 |       |        |                                                                                     |       |

# HCM 7th Signalized Intersection Capacity Analysis

## 6: 12th Ave & Hanford Armona Rd

AM 2024  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |  |  |  |  |  |   |  |  |  |  |  |
| Traffic Volume (veh/h)        | 79                                                                                | 129                                                                               | 35                                                                                | 28                                                                                | 158                                                                               | 202                                                                               | 74                                                                                  | 332                                                                                 | 32                                                                                  | 97                                                                                  | 176                                                                                 | 35                                                                                  |
| Future Volume (veh/h)         | 79                                                                                | 129                                                                               | 35                                                                                | 28                                                                                | 158                                                                               | 202                                                                               | 74                                                                                  | 332                                                                                 | 32                                                                                  | 97                                                                                  | 176                                                                                 | 35                                                                                  |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                                | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 86                                                                                | 140                                                                               | 38                                                                                | 30                                                                                | 172                                                                               | 220                                                                               | 80                                                                                  | 361                                                                                 | 35                                                                                  | 105                                                                                 | 191                                                                                 | 38                                                                                  |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Cap, veh/h                    | 134                                                                               | 217                                                                               | 169                                                                               | 260                                                                               | 361                                                                               | 282                                                                               | 125                                                                                 | 1939                                                                                | 187                                                                                 | 509                                                                                 | 1399                                                                                | 273                                                                                 |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                                | 2.00                                                                                | 2.00                                                                                | 2.00                                                                                | 2.00                                                                                | 2.00                                                                                |
| Prop Arrive On Green          | 0.08                                                                              | 0.12                                                                              | 0.12                                                                              | 0.16                                                                              | 0.19                                                                              | 0.19                                                                              | 0.15                                                                                | 1.00                                                                                | 1.00                                                                                | 0.94                                                                                | 0.94                                                                                | 0.91                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 45.1                                                                              | 41.2                                                                              | 22.4                                                                              | 32.7                                                                              | 33.3                                                                              | 40.5                                                                              | 41.7                                                                                | 0.3                                                                                 | 0.3                                                                                 | 2.3                                                                                 | 1.7                                                                                 | 2.0                                                                                 |
| Ln Grp LOS                    | D                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | D                                                                                   | A                                                                                   | A                                                                                   | A                                                                                   | A                                                                                   | A                                                                                   |
| Approach Vol, veh/h           |                                                                                   | 264                                                                               |                                                                                   |                                                                                   | 422                                                                               |                                                                                   |                                                                                     | 476                                                                                 |                                                                                     |                                                                                     | 334                                                                                 |                                                                                     |
| Approach Delay, s/veh         |                                                                                   | 39.8                                                                              |                                                                                   |                                                                                   | 37.0                                                                              |                                                                                   |                                                                                     | 7.3                                                                                 |                                                                                     |                                                                                     | 2.0                                                                                 |                                                                                     |
| Approach LOS                  |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Timer:                        |                                                                                   | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                   | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  |                                                                                   | 2                                                                                 | 4                                                                                 | 3                                                                                 | 5                                                                                 | 6                                                                                 | 8                                                                                   | 7                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       |                                                                                   | 4.0                                                                               | 3.0                                                                               | 2.0                                                                               | 2.0                                                                               | 6.3                                                                               | 3.0                                                                                 | 2.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      |                                                                                   | 57.3                                                                              | 14.4                                                                              | 18.3                                                                              | 10.8                                                                              | 46.5                                                                              | 21.4                                                                                | 11.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       |                                                                                   | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                                 | 5.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           |                                                                                   | 40.5                                                                              | 28.3                                                                              | 4.7                                                                               | 9.5                                                                               | 25.5                                                                              | 23.5                                                                                | 9.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    |                                                                                   | 4.0                                                                               | 4.1                                                                               | 4.1                                                                               | 4.1                                                                               | 4.5                                                                               | 4.2                                                                                 | 4.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       |                                                                                   | 2.0                                                                               | 8.4                                                                               | 3.4                                                                               | 6.1                                                                               | 2.8                                                                               | 14.9                                                                                | 6.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       |                                                                                   | 1.4                                                                               | 0.5                                                                               | 0.0                                                                               | 0.0                                                                               | 1.3                                                                               | 1.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        |                                                                                   | 1.00                                                                              | 1.00                                                                              | 0.53                                                                              | 0.86                                                                              | 1.00                                                                              | 1.00                                                                                | 0.88                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         |                                                                                   | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.13                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   |                                                                                   |                                                                                   | 3                                                                                 | 5                                                                                 | 1                                                                                 |                                                                                     | 7                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   |                                                                                   | 1641                                                                              | 1641                                                                              | 910                                                                               |                                                                                     | 1641                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 2                                                                                 | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                 | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 3275                                                                              | 1870                                                                              |                                                                                   |                                                                                   | 2965                                                                              | 1870                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 12                                                                                | 14                                                                                |                                                                                   |                                                                                   | 16                                                                                | 18                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 316                                                                               | 1460                                                                              |                                                                                   |                                                                                   | 578                                                                               | 1460                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 3                                                                                 | 5                                                                                 | 1                                                                                 | 0                                                                                   | 7                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report



# HCM 7th Signalized Intersection Capacity Analysis

## 6: 12th Ave & Hanford Armona Rd

AM 2024  
07/16/2024

| Lane Assignment                     | L (Prot) |      |      | L (Prot) |      | L    | L (Prot) |      |
|-------------------------------------|----------|------|------|----------|------|------|----------|------|
| Lanes in Grp                        | 0        | 0    | 0    | 1        | 1    | 1    | 0        | 1    |
| Grp Vol (v), veh/h                  | 0        | 0    | 0    | 30       | 80   | 105  | 0        | 86   |
| Grp Sat Flow (s), veh/h/ln          | 0        | 0    | 0    | 1641     | 1641 | 910  | 0        | 1641 |
| Q Serve Time (g_s), s               | 0.0      | 0.0  | 0.0  | 1.4      | 4.1  | 0.8  | 0.0      | 4.6  |
| Cycle Q Clear Time (g_c), s         | 0.0      | 0.0  | 0.0  | 1.4      | 4.1  | 0.8  | 0.0      | 4.6  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0        | 0    | 0    | 0        | 0    | 910  | 0        | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0        | 0    | 0    | 0        | 0    | 0    | 0        | 0    |
| Perm LT Eff Green (g_p), s          | 0.0      | 0.0  | 0.0  | 0.0      | 0.0  | 42.5 | 0.0      | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0      | 0.0  | 0.0  | 0.0      | 0.0  | 42.5 | 0.0      | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0      | 0.0  | 0.0  | 0.0      | 0.0  | 0.8  | 0.0      | 0.0  |
| Time to First Blk (g_f), s          | 0.0      | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0      | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0      | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0      | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00     | 0.00 | 0.00 | 1.00     | 1.00 | 1.00 | 0.00     | 1.00 |
| Lane Grp Cap (c), veh/h             | 0        | 0    | 0    | 260      | 125  | 509  | 0        | 134  |
| V/C Ratio (X)                       | 0.00     | 0.00 | 0.00 | 0.12     | 0.64 | 0.21 | 0.00     | 0.64 |
| Avail Cap (c_a), veh/h              | 0        | 0    | 0    | 260      | 201  | 509  | 0        | 201  |
| Upstream Filter (I)                 | 0.00     | 0.00 | 0.00 | 0.99     | 0.86 | 1.00 | 0.00     | 1.00 |
| Uniform Delay (d1), s/veh           | 0.0      | 0.0  | 0.0  | 32.5     | 37.0 | 1.4  | 0.0      | 40.1 |
| Incr Delay (d2), s/veh              | 0.0      | 0.0  | 0.0  | 0.2      | 4.7  | 0.9  | 0.0      | 5.0  |
| Initial Q Delay (d3), s/veh         | 0.0      | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0      | 0.0  |
| Control Delay (d), s/veh            | 0.0      | 0.0  | 0.0  | 32.7     | 41.7 | 2.3  | 0.0      | 45.1 |
| 1st-Term Q (Q1), veh/ln             | 0.0      | 0.0  | 0.0  | 0.5      | 1.5  | 0.1  | 0.0      | 1.7  |
| 2nd-Term Q (Q2), veh/ln             | 0.0      | 0.0  | 0.0  | 0.0      | 0.2  | 0.1  | 0.0      | 0.2  |
| 3rd-Term Q (Q3), veh/ln             | 0.0      | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0      | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00     | 0.00 | 0.00 | 1.00     | 1.00 | 1.00 | 0.00     | 1.00 |
| %ile Back of Q (50%), veh/ln        | 0.0      | 0.0  | 0.0  | 0.5      | 1.6  | 0.2  | 0.0      | 1.9  |
| %ile Storage Ratio (RQ%)            | 0.00     | 0.00 | 0.00 | 0.27     | 0.21 | 0.03 | 0.00     | 0.32 |
| Initial Q (Qb), veh                 | 0.0      | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0      | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0      | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0      | 0.0  |
| Sat Delay (ds), s/veh               | 0.0      | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0      | 0.0  |
| Sat Q (Qs), veh                     | 0.0      | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0      | 0.0  |
| Sat Cap (cs), veh/h                 | 0        | 0    | 0    | 0        | 0    | 0    | 0        | 0    |
| Initial Q Clear Time (tc), h        | 0.0      | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0      | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 4    | 0    | 0    | 6    | 8    | 0    |
| Lane Assignment             | T    |      | T    |      |      | T    | T    |      |
| Lanes in Grp                | 0    | 1    | 1    | 0    | 0    | 1    | 1    | 0    |
| Grp Vol (v), veh/h          | 0    | 195  | 140  | 0    | 0    | 113  | 172  | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1777 | 1870 | 0    | 0    | 1777 | 1870 | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 6.4  | 0.0  | 0.0  | 0.4  | 7.4  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 6.4  | 0.0  | 0.0  | 0.4  | 7.4  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 1052 | 217  | 0    | 0    | 838  | 361  | 0    |
| V/C Ratio (X)               | 0.00 | 0.19 | 0.64 | 0.00 | 0.00 | 0.13 | 0.48 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 1052 | 619  | 0    | 0    | 838  | 520  | 0    |
| Upstream Filter (I)         | 0.00 | 0.86 | 1.00 | 0.00 | 0.00 | 1.00 | 0.99 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 38.0 | 0.0  | 0.0  | 1.4  | 32.3 | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.3  | 3.2  | 0.0  | 0.0  | 0.3  | 1.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.3  | 41.2 | 0.0  | 0.0  | 1.7  | 33.3 | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 2.7  | 0.0  | 0.0  | 0.1  | 3.1  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 6: 12th Ave & Hanford Armona Rd

AM 2024  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.1  | 0.2  | 0.0  | 0.0  | 0.1  | 0.1  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.1  | 2.9  | 0.0  | 0.0  | 0.2  | 3.2  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 14   | 0    | 0    | 16   | 18   | 0    |
| Lane Assignment                  |      | T+R  | R    |      |      | T+R  | R    |      |
| Lanes in Grp                     | 0    | 1    | 1    | 0    | 0    | 1    | 1    | 0    |
| Grp Vol (v), veh/h               | 0    | 201  | 38   | 0    | 0    | 116  | 220  | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1814 | 1460 | 0    | 0    | 1766 | 1460 | 0    |
| Q Serve Time (g_s), s            | 0.0  | 0.0  | 1.6  | 0.0  | 0.0  | 0.5  | 12.9 | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 0.0  | 1.6  | 0.0  | 0.0  | 0.5  | 12.9 | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.17 | 1.00 | 0.00 | 0.00 | 0.33 | 1.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1074 | 169  | 0    | 0    | 833  | 282  | 0    |
| V/C Ratio (X)                    | 0.00 | 0.19 | 0.22 | 0.00 | 0.00 | 0.14 | 0.78 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1074 | 483  | 0    | 0    | 833  | 406  | 0    |
| Upstream Filter (I)              | 0.00 | 0.86 | 1.00 | 0.00 | 0.00 | 1.00 | 0.99 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 0.0  | 21.7 | 0.0  | 0.0  | 1.6  | 34.5 | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.3  | 0.7  | 0.0  | 0.0  | 0.3  | 6.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 0.3  | 22.4 | 0.0  | 0.0  | 2.0  | 40.5 | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.0  | 0.7  | 0.0  | 0.0  | 0.1  | 4.2  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.1  | 0.0  | 0.0  | 0.0  | 0.1  | 0.5  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.1  | 0.7  | 0.0  | 0.0  | 0.2  | 4.7  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.00 | 0.19 | 0.00 | 0.00 | 0.00 | 2.37 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 20.2 |
| HCM 7th LOS                  | C    |

# HCM 7th Signalized Intersection Capacity Analysis

## 7: 11th Ave & Hanford Armona Rd

AM 2024  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |  |  |  |  |                                                                                   |   |  |  |  |  |  |
| Traffic Volume (veh/h)        | 150                                                                               | 170                                                                               | 52                                                                                | 81                                                                                | 114                                                                               | 69                                                                                | 32                                                                                  | 286                                                                                 | 87                                                                                  | 48                                                                                  | 218                                                                                 | 79                                                                                  |
| Future Volume (veh/h)         | 150                                                                               | 170                                                                               | 52                                                                                | 81                                                                                | 114                                                                               | 69                                                                                | 32                                                                                  | 286                                                                                 | 87                                                                                  | 48                                                                                  | 218                                                                                 | 79                                                                                  |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                                | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 163                                                                               | 185                                                                               | 57                                                                                | 88                                                                                | 124                                                                               | 75                                                                                | 35                                                                                  | 311                                                                                 | 95                                                                                  | 52                                                                                  | 237                                                                                 | 86                                                                                  |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Cap, veh/h                    | 745                                                                               | 1225                                                                              | 956                                                                               | 727                                                                               | 715                                                                               | 432                                                                               | 224                                                                                 | 479                                                                                 | 374                                                                                 | 177                                                                                 | 479                                                                                 | 374                                                                                 |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Prop Arrive On Green          | 0.65                                                                              | 0.65                                                                              | 0.65                                                                              | 0.65                                                                              | 0.65                                                                              | 0.64                                                                              | 0.26                                                                                | 0.26                                                                                | 0.26                                                                                | 0.26                                                                                | 0.26                                                                                | 0.26                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 8.7                                                                               | 6.2                                                                               | 5.7                                                                               | 7.5                                                                               | 0.0                                                                               | 6.5                                                                               | 34.2                                                                                | 31.3                                                                                | 27.0                                                                                | 38.9                                                                                | 29.3                                                                                | 26.8                                                                                |
| Ln Grp LOS                    | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   | A                                                                                 | C                                                                                   | C                                                                                   | C                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h           | 405                                                                               |                                                                                   |                                                                                   | 287                                                                               |                                                                                   |                                                                                   | 441                                                                                 |                                                                                     |                                                                                     | 375                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh         | 7.1                                                                               |                                                                                   |                                                                                   | 6.8                                                                               |                                                                                   |                                                                                   | 30.6                                                                                |                                                                                     |                                                                                     | 30.0                                                                                |                                                                                     |                                                                                     |
| Approach LOS                  | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer:                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |
| Case No                       | 5.0                                                                               |                                                                                   |                                                                                   | 5.0                                                                               |                                                                                   |                                                                                   | 5.0                                                                                 |                                                                                     |                                                                                     | 6.0                                                                                 |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 27.1                                                                              |                                                                                   |                                                                                   | 62.9                                                                              |                                                                                   |                                                                                   | 27.1                                                                                |                                                                                     |                                                                                     | 62.9                                                                                |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | 5.5                                                                               |                                                                                   |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                   | 5.5                                                                                 |                                                                                     |                                                                                     | 5.5                                                                                 |                                                                                     |                                                                                     |
| Max Green (Gmax), s           | 37.5                                                                              |                                                                                   |                                                                                   | 41.5                                                                              |                                                                                   |                                                                                   | 37.5                                                                                |                                                                                     |                                                                                     | 41.5                                                                                |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    | 4.2                                                                               |                                                                                   |                                                                                   | 4.4                                                                               |                                                                                   |                                                                                   | 4.3                                                                                 |                                                                                     |                                                                                     | 4.4                                                                                 |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       | 15.4                                                                              |                                                                                   |                                                                                   | 12.2                                                                              |                                                                                   |                                                                                   | 20.3                                                                                |                                                                                     |                                                                                     | 8.6                                                                                 |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       | 1.6                                                                               |                                                                                   |                                                                                   | 1.6                                                                               |                                                                                   |                                                                                   | 1.3                                                                                 |                                                                                     |                                                                                     | 1.2                                                                                 |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         | 0.00                                                                              |                                                                                   |                                                                                   | 0.00                                                                              |                                                                                   |                                                                                   | 0.00                                                                                |                                                                                     |                                                                                     | 0.00                                                                                |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 5                                                                                 |                                                                                   |                                                                                   | 7                                                                                 |                                                                                   |                                                                                   | 1                                                                                   |                                                                                     |                                                                                     | 3                                                                                   |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 973                                                                               |                                                                                   |                                                                                   | 1090                                                                              |                                                                                   |                                                                                   | 902                                                                                 |                                                                                     |                                                                                     | 1048                                                                                |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 1870                                                                              |                                                                                   |                                                                                   | 1870                                                                              |                                                                                   |                                                                                   | 1870                                                                                |                                                                                     |                                                                                     | 1091                                                                                |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 12                                                                                |                                                                                   |                                                                                   | 14                                                                                |                                                                                   |                                                                                   | 16                                                                                  |                                                                                     |                                                                                     | 18                                                                                  |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 1460                                                                              |                                                                                   |                                                                                   | 1460                                                                              |                                                                                   |                                                                                   | 1460                                                                                |                                                                                     |                                                                                     | 660                                                                                 |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 3                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 7: 11th Ave & Hanford Armona Rd

AM 2024  
07/16/2024

|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     |      | L    |      | L    |      | L    |      | L    |
| Lanes in Grp                        | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 1    |
| Grp Vol (v), veh/h                  | 0    | 35   | 0    | 163  | 0    | 52   | 0    | 88   |
| Grp Sat Flow (s), veh/h/ln          | 0    | 973  | 0    | 1090 | 0    | 902  | 0    | 1048 |
| Q Serve Time (g_s), s               | 0.0  | 2.9  | 0.0  | 6.2  | 0.0  | 4.9  | 0.0  | 3.2  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 12.6 | 0.0  | 10.2 | 0.0  | 18.3 | 0.0  | 6.6  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 973  | 0    | 1090 | 0    | 902  | 0    | 1048 |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 23.1 | 0.0  | 58.9 | 0.0  | 23.1 | 0.0  | 58.9 |
| Perm LT Serve Time (g_u), s         | 0.0  | 13.3 | 0.0  | 54.9 | 0.0  | 9.7  | 0.0  | 55.5 |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 2.9  | 0.0  | 6.2  | 0.0  | 4.9  | 0.0  | 3.2  |
| Time to First Blk (g_f), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Lane Grp Cap (c), veh/h             | 0    | 224  | 0    | 745  | 0    | 177  | 0    | 727  |
| V/C Ratio (X)                       | 0.00 | 0.16 | 0.00 | 0.22 | 0.00 | 0.29 | 0.00 | 0.12 |
| Avail Cap (c_a), veh/h              | 0    | 397  | 0    | 745  | 0    | 337  | 0    | 727  |
| Upstream Filter (I)                 | 0.00 | 1.00 | 0.00 | 0.96 | 0.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 33.9 | 0.0  | 8.1  | 0.0  | 38.0 | 0.0  | 7.2  |
| Incr Delay (d2), s/veh              | 0.0  | 0.3  | 0.0  | 0.6  | 0.0  | 0.9  | 0.0  | 0.3  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 34.2 | 0.0  | 8.7  | 0.0  | 38.9 | 0.0  | 7.5  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.6  | 0.0  | 1.1  | 0.0  | 1.0  | 0.0  | 0.5  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  | 0.0  | 0.1  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.6  | 0.0  | 1.2  | 0.0  | 1.1  | 0.0  | 0.6  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.15 | 0.00 | 0.31 | 0.00 | 0.38 | 0.00 | 0.15 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 8    |
| Lane Assignment             |      | T    |      | T    |      | T    |      |      |
| Lanes in Grp                | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 311  | 0    | 185  | 0    | 237  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1870 | 0    | 1870 | 0    | 1870 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 13.4 | 0.0  | 3.4  | 0.0  | 9.7  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 13.4 | 0.0  | 3.4  | 0.0  | 9.7  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 479  | 0    | 1225 | 0    | 479  | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.65 | 0.00 | 0.15 | 0.00 | 0.49 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 810  | 0    | 1225 | 0    | 810  | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 1.00 | 0.00 | 0.96 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 29.9 | 0.0  | 5.9  | 0.0  | 28.5 | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 1.5  | 0.0  | 0.3  | 0.0  | 0.8  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 31.3 | 0.0  | 6.2  | 0.0  | 29.3 | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 5.4  | 0.0  | 0.9  | 0.0  | 4.0  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 7: 11th Ave & Hanford Armona Rd

AM 2024  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.2  | 0.0  | 0.1  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 5.6  | 0.0  | 1.0  | 0.0  | 4.1  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.08 | 0.00 | 0.01 | 0.00 | 0.04 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 18   |
| Lane Assignment                  |      | R    |      | R    |      | R    |      | T+R  |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 1    |
| Grp Vol (v), veh/h               | 0    | 95   | 0    | 57   | 0    | 86   | 0    | 199  |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1460 | 0    | 1460 | 0    | 1460 | 0    | 1752 |
| Q Serve Time (g_s), s            | 0.0  | 4.7  | 0.0  | 1.3  | 0.0  | 4.2  | 0.0  | 4.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 4.7  | 0.0  | 1.3  | 0.0  | 4.2  | 0.0  | 4.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.38 |
| Lane Grp Cap (c), veh/h          | 0    | 374  | 0    | 956  | 0    | 374  | 0    | 1147 |
| V/C Ratio (X)                    | 0.00 | 0.25 | 0.00 | 0.06 | 0.00 | 0.23 | 0.00 | 0.17 |
| Avail Cap (c_a), veh/h           | 0    | 633  | 0    | 956  | 0    | 633  | 0    | 1147 |
| Upstream Filter (I)              | 0.00 | 1.00 | 0.00 | 0.96 | 0.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 26.6 | 0.0  | 5.6  | 0.0  | 26.5 | 0.0  | 6.2  |
| Incr Delay (d2), s/veh           | 0.0  | 0.4  | 0.0  | 0.1  | 0.0  | 0.3  | 0.0  | 0.3  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 27.0 | 0.0  | 5.7  | 0.0  | 26.8 | 0.0  | 6.5  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 1.5  | 0.0  | 0.3  | 0.0  | 1.3  | 0.0  | 1.1  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 1.5  | 0.0  | 0.3  | 0.0  | 1.4  | 0.0  | 1.2  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.39 | 0.00 | 0.15 | 0.00 | 0.17 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 19.6 |
| HCM 7th LOS                  | B    |

# HCM 7th Signalized Intersection Capacity Analysis

## 8: 12th Ave & Hume Ave

AM 2024  
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|                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|---|---|---|
|                               |  |  |  |  |  |  |      |   |   |   |
| Movement                      | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |      |   |   |   |
| Lane Configurations           |  |  |  |                                                                                   |  |  |      |   |   |   |
| Traffic Volume (veh/h)        | 19                                                                                | 227                                                                               | 94                                                                                | 6                                                                                 | 90                                                                                | 106                                                                               |      |   |   |   |
| Future Volume (veh/h)         | 19                                                                                | 227                                                                               | 94                                                                                | 6                                                                                 | 90                                                                                | 106                                                                               |      |   |   |   |
| Number                        | 3                                                                                 | 18                                                                                | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 |      |   |   |   |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |      |   |   |   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |   |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |      |   |   |   |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |   |
| Work Zone On Approach         | No                                                                                |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |      |   |   |   |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              |      |   |   |   |
| Adj Flow Rate, veh/h          | 21                                                                                | 247                                                                               | 102                                                                               | 7                                                                                 | 98                                                                                | 115                                                                               |      |   |   |   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |      |   |   |   |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |      |   |   |   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |      |   |   |   |
| Cap, veh/h                    | 323                                                                               | 288                                                                               | 1235                                                                              | 85                                                                                | 903                                                                               | 1335                                                                              |      |   |   |   |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                              | 2.00                                                                              |      |   |   |   |
| Prop Arrive On Green          | 0.20                                                                              | 0.20                                                                              | 0.71                                                                              | 0.71                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |   |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Ln Grp Delay, s/veh           | 29.5                                                                              | 42.2                                                                              | 0.0                                                                               | 4.0                                                                               | 0.3                                                                               | 0.1                                                                               |      |   |   |   |
| Ln Grp LOS                    | C                                                                                 | D                                                                                 |                                                                                   | A                                                                                 | A                                                                                 | A                                                                                 |      |   |   |   |
| Approach Vol, veh/h           | 268                                                                               |                                                                                   | 109                                                                               |                                                                                   |                                                                                   | 213                                                                               |      |   |   |   |
| Approach Delay, s/veh         | 41.2                                                                              |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                   | 0.2                                                                               |      |   |   |   |
| Approach LOS                  | D                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |      |   |   |   |
| Timer:                        |                                                                                   | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6    | 7 | 8 |   |
| Assigned Phs                  |                                                                                   |                                                                                   | 2                                                                                 | 8                                                                                 |                                                                                   |                                                                                   | 6    |   |   |   |
| Case No                       |                                                                                   |                                                                                   | 8.0                                                                               | 9.0                                                                               |                                                                                   |                                                                                   | 6.0  |   |   |   |
| Phs Duration (G+Y+Rc), s      |                                                                                   |                                                                                   | 68.3                                                                              | 21.7                                                                              |                                                                                   |                                                                                   | 68.3 |   |   |   |
| Change Period (Y+Rc), s       |                                                                                   |                                                                                   | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                   | 4.0  |   |   |   |
| Max Green (Gmax), s           |                                                                                   |                                                                                   | 36.0                                                                              | 46.0                                                                              |                                                                                   |                                                                                   | 36.0 |   |   |   |
| Max Allow Headway (MAH), s    |                                                                                   |                                                                                   | 4.0                                                                               | 4.3                                                                               |                                                                                   |                                                                                   | 4.2  |   |   |   |
| Max Q Clear (g_c+I1), s       |                                                                                   |                                                                                   | 3.6                                                                               | 16.7                                                                              |                                                                                   |                                                                                   | 3.8  |   |   |   |
| Green Ext Time (g_e), s       |                                                                                   |                                                                                   | 0.3                                                                               | 1.1                                                                               |                                                                                   |                                                                                   | 0.8  |   |   |   |
| Prob of Phs Call (p_c)        |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 1.00 |   |   |   |
| Prob of Max Out (p_x)         |                                                                                   |                                                                                   | 0.00                                                                              | 0.00                                                                              |                                                                                   |                                                                                   | 0.00 |   |   |   |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 5                                                                                 | 3                                                                                 |                                                                                   |                                                                                   | 1    |   |   |   |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 0                                                                                 | 1641                                                                              |                                                                                   |                                                                                   | 1183 |   |   |   |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 2                                                                                 | 8                                                                                 |                                                                                   |                                                                                   | 6    |   |   |   |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 1730                                                                              | 0                                                                                 |                                                                                   |                                                                                   | 1870 |   |   |   |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 12                                                                                | 18                                                                                |                                                                                   |                                                                                   | 16   |   |   |   |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 119                                                                               | 1460                                                                              |                                                                                   |                                                                                   | 0    |   |   |   |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 0                                                                                 | 5                                                                                 | 3                                                                                 | 0                                                                                 | 0    | 1 | 0 | 0 |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 8: 12th Ave & Hume Ave

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|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     | L    |      |      |      | L    |      |      |      |
| Lanes in Grp                        | 0    | 0    | 1    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 21   | 0    | 0    | 98   | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 1641 | 0    | 0    | 1183 | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.9  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.9  | 0.0  | 0.0  | 1.8  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 1641 | 0    | 0    | 1183 | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 64.3 | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 62.6 | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 64.3 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 323  | 0    | 0    | 903  | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 | 0.11 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 839  | 0    | 0    | 903  | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 29.4 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 29.5 | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 8    | 0    | 0    | 6    | 0    | 0    |
| Lane Assignment             | T    |      |      |      |      |      |      |      |
| Lanes in Grp                | 0    | 0    | 0    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 0    | 0    | 0    | 0    | 115  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 0    | 0    | 0    | 0    | 1870 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 0    | 0    | 0    | 0    | 1335 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.09 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 0    | 0    | 0    | 0    | 1335 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 8: 12th Ave & Hume Ave

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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 18   | 0    | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      |      |      |      |      |
| Lanes in Grp                     | 0    | 1    | 1    | 0    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 109  | 247  | 0    | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1849 | 1460 | 0    | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 1.6  | 14.7 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 1.6  | 14.7 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.06 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1320 | 288  | 0    | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.08 | 0.86 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1320 | 746  | 0    | 0    | 0    | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 3.9  | 34.9 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.1  | 7.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 4.0  | 42.2 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.4  | 4.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.0  | 0.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.4  | 5.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.01 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 19.5 |
| HCM 7th LOS                  | B    |





# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

AM 2024+Project  
07/16/2024

| Movement                      | EBL | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|-------------------------------|-----|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations           |     |      |      | ↰    |      | ↰    | ↰    | ↰    |      |      | ↰    | ↰    |
| Traffic Volume (veh/h)        | 0   | 0    | 0    | 52   | 0    | 396  | 29   | 770  | 0    | 0    | 506  | 276  |
| Future Volume (veh/h)         | 0   | 0    | 0    | 52   | 0    | 396  | 29   | 770  | 0    | 0    | 506  | 276  |
| Number                        |     |      |      | 3    | 8    | 18   | 5    | 2    | 12   | 1    | 6    | 16   |
| Initial Q, veh                |     |      |      | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Lane Width Adj.               |     |      |      | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped-Bike Adj (A_pbT)          |     |      |      | 1.00 |      | 1.00 | 1.00 |      | 1.00 | 1.00 |      | 1.00 |
| Parking Bus Adj               |     |      |      | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach         |     |      |      | No   |      |      |      | No   |      |      |      | No   |
| Lanes Open During Work Zone   |     |      |      |      |      |      |      |      |      |      |      |      |
| Adj Sat Flow, veh/h/ln        |     |      |      | 1723 | 0    | 1723 | 1723 | 1870 | 0    | 0    | 1870 | 1723 |
| Adj Flow Rate, veh/h          |     |      |      | 57   | 0    | 430  | 32   | 837  | 0    | 0    | 550  | 300  |
| Peak Hour Factor              |     |      |      | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, %          |     |      |      | 2    | 0    | 2    | 2    | 2    | 0    | 0    | 2    | 2    |
| Opposing Right Turn Influence |     |      |      | Yes  |      |      | Yes  |      |      | No   |      |      |
| Cap, veh/h                    |     |      |      | 647  | 0    | 522  | 40   | 2520 | 0    | 0    | 3269 | 935  |
| HCM Platoon Ratio             |     |      |      | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Prop Arrive On Green          |     |      |      | 0.20 | 0.00 | 0.20 | 0.02 | 0.71 | 0.00 | 0.00 | 0.64 | 0.64 |
| Unsig. Movement Delay         |     |      |      |      |      |      |      |      |      |      |      |      |
| Ln Grp Delay, s/veh           |     |      |      | 29.2 | 0.0  | 38.5 | 70.9 | 5.3  | 0.0  | 0.0  | 6.6  | 8.2  |
| Ln Grp LOS                    |     |      |      | C    |      | D    | E    | A    |      |      | A    | A    |
| Approach Vol, veh/h           |     |      |      | 487  |      |      |      | 869  |      |      |      | 850  |
| Approach Delay, s/veh         |     |      |      | 37.4 |      |      |      | 7.7  |      |      |      | 7.2  |
| Approach LOS                  |     |      |      | D    |      |      |      | A    |      |      |      | A    |
| Timer:                        | 1   | 2    | 3    | 4    | 5    | 6    | 7    | 8    |      |      |      |      |
| Assigned Phs                  |     | 2    | 8    |      | 5    | 6    |      |      |      |      |      |      |
| Case No                       |     | 4.0  | 9.0  |      | 2.0  | 7.0  |      |      |      |      |      |      |
| Phs Duration (G+Y+Rc), s      |     | 67.8 | 22.2 |      | 6.2  | 61.6 |      |      |      |      |      |      |
| Change Period (Y+Rc), s       |     | 5.5  | 4.0  |      | 4.0  | 5.5  |      |      |      |      |      |      |
| Max Green (Gmax), s           |     | 52.5 | 28.0 |      | 10.0 | 38.5 |      |      |      |      |      |      |
| Max Allow Headway (MAH), s    |     | 4.0  | 4.3  |      | 4.1  | 4.1  |      |      |      |      |      |      |
| Max Q Clear (g_c+I1), s       |     | 10.1 | 16.4 |      | 3.7  | 10.4 |      |      |      |      |      |      |
| Green Ext Time (g_e), s       |     | 3.9  | 1.8  |      | 0.0  | 3.8  |      |      |      |      |      |      |
| Prob of Phs Call (p_c)        |     | 1.00 | 1.00 |      | 0.55 | 1.00 |      |      |      |      |      |      |
| Prob of Max Out (p_x)         |     | 0.00 | 0.05 |      | 0.05 | 0.00 |      |      |      |      |      |      |
| Left-Turn Movement Data       |     |      |      |      |      |      |      |      |      |      |      |      |
| Assigned Mvmt                 |     |      |      | 3    |      | 5    | 1    |      |      |      |      |      |
| Mvmt Sat Flow, veh/h          |     |      |      | 3183 |      | 1641 | 0    |      |      |      |      |      |
| Through Movement Data         |     |      |      |      |      |      |      |      |      |      |      |      |
| Assigned Mvmt                 |     | 2    | 8    |      |      | 6    |      |      |      |      |      |      |
| Mvmt Sat Flow, veh/h          |     | 3647 | 0    |      |      | 5274 |      |      |      |      |      |      |
| Right-Turn Movement Data      |     |      |      |      |      |      |      |      |      |      |      |      |
| Assigned Mvmt                 |     |      | 12   | 18   |      |      | 16   |      |      |      |      |      |
| Mvmt Sat Flow, veh/h          |     |      | 0    | 2569 |      |      | 1460 |      |      |      |      |      |
| Left Lane Group Data          |     |      |      |      |      |      |      |      |      |      |      |      |
| Assigned Mvmt                 | 0   | 0    | 3    | 0    | 5    | 1    | 0    | 0    |      |      |      |      |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

AM 2024+Project  
07/16/2024

|                                     |      |      |      |          |      |      |      |      |
|-------------------------------------|------|------|------|----------|------|------|------|------|
| Lane Assignment                     |      |      | L    | L (Prot) |      |      |      |      |
| Lanes in Grp                        | 0    | 0    | 2    | 0        | 1    | 0    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 57   | 0        | 32   | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 1591 | 0        | 1641 | 0    | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 1.3  | 0.0      | 1.7  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 1.3  | 0.0      | 1.7  | 0.0  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 1591 | 0        | 0    | 0    | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0        | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 57.6 | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 1.00 | 0.00     | 1.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 647  | 0        | 40   | 0    | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.09 | 0.00     | 0.80 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 994  | 0        | 182  | 0    | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 1.00 | 0.00     | 0.93 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 29.1 | 0.0      | 43.7 | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.1  | 0.0      | 27.2 | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 29.2 | 0.0      | 70.9 | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.5  | 0.0      | 0.7  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0      | 0.3  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 0.00 | 1.00 | 0.00     | 1.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.5  | 0.0      | 1.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.04 | 0.00     | 0.06 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0        | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 8    | 0    | 0    | 6    | 0    | 0    |
| Lane Assignment             | T    |      | T    |      |      |      |      |      |
| Lanes in Grp                | 0    | 2    | 0    | 0    | 0    | 3    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 837  | 0    | 0    | 0    | 550  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1777 | 0    | 0    | 0    | 1702 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 8.1  | 0.0  | 0.0  | 0.0  | 3.9  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 8.1  | 0.0  | 0.0  | 0.0  | 3.9  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 2520 | 0    | 0    | 0    | 3269 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.33 | 0.00 | 0.00 | 0.00 | 0.17 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 2520 | 0    | 0    | 0    | 3269 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.93 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 5.0  | 0.0  | 0.0  | 0.0  | 6.5  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.3  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 5.3  | 0.0  | 0.0  | 0.0  | 6.6  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 1.8  | 0.0  | 0.0  | 0.0  | 1.0  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

AM 2024+Project  
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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 1.9  | 0.0  | 0.0  | 0.0  | 1.1  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.09 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 18   | 0    | 0    | 16   | 0    | 0    |
| Lane Assignment                  | R    |      |      | R    |      |      |      |      |
| Lanes in Grp                     | 0    | 0    | 2    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 0    | 430  | 0    | 0    | 300  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 0    | 1285 | 0    | 0    | 1460 | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 0.0  | 14.4 | 0.0  | 0.0  | 8.4  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 0.0  | 14.4 | 0.0  | 0.0  | 8.4  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 0    | 522  | 0    | 0    | 935  | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.00 | 0.82 | 0.00 | 0.00 | 0.32 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 0    | 802  | 0    | 0    | 935  | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 0.0  | 34.3 | 0.0  | 0.0  | 7.3  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.0  | 4.2  | 0.0  | 0.0  | 0.9  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 0.0  | 38.5 | 0.0  | 0.0  | 8.2  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.0  | 4.1  | 0.0  | 0.0  | 1.9  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.0  | 4.4  | 0.0  | 0.0  | 2.1  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.00 | 0.27 | 0.00 | 0.00 | 0.43 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 14.1 |
| HCM 7th LOS                  | B    |

# HCM 7th Signalized Intersection Capacity Analysis

## 2: 12th Ave & SR 198 WB EB Ramps

AM 2024+Project  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |  |                                                                                     |                                                                                     |  |  |
| Traffic Volume (veh/h)        | 302                                                                               | 0                                                                                 | 18                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 532                                                                                 | 127                                                                                 | 0                                                                                   | 298                                                                                 | 0                                                                                   |
| Future Volume (veh/h)         | 302                                                                               | 0                                                                                 | 18                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 532                                                                                 | 127                                                                                 | 0                                                                                   | 298                                                                                 | 0                                                                                   |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                |                                                                                   |                                                                                   |                                                                                   | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 0                                                                                 | 1723                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1870                                                                                | 1723                                                                                | 0                                                                                   | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 328                                                                               | 0                                                                                 | 20                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 578                                                                                 | 138                                                                                 | 0                                                                                   | 324                                                                                 | 0                                                                                   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 0                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |                                                                                     | No                                                                                  |
| Cap, veh/h                    | 437                                                                               | 0                                                                                 | 200                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2206                                                                                | 525                                                                                 | 0                                                                                   | 2754                                                                                | 1131                                                                                |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.33                                                                                | 1.33                                                                                | 1.00                                                                                | 2.00                                                                                | 2.00                                                                                |
| Prop Arrive On Green          | 0.14                                                                              | 0.00                                                                              | 0.14                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 40.0                                                                              | 0.0                                                                               | 34.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 0.4                                                                                 | 0.4                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.0                                                                                 |
| Ln Grp LOS                    | D                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     | A                                                                                   | A                                                                                   |                                                                                     | A                                                                                   |                                                                                     |
| Approach Vol, veh/h           | 348                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 716                                                                                 |                                                                                     |                                                                                     | 324                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh         | 39.6                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.4                                                                                 |                                                                                     |                                                                                     | 0.1                                                                                 |                                                                                     |                                                                                     |
| Approach LOS                  | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Timer:                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       | 8.0                                                                               |                                                                                   | 9.0                                                                               |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 73.7                                                                              |                                                                                   | 16.3                                                                              |                                                                                   | 73.7                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | 5.5                                                                               |                                                                                   | 4.0                                                                               |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           | 49.5                                                                              |                                                                                   | 31.0                                                                              |                                                                                   | 49.5                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    | 4.1                                                                               |                                                                                   | 4.1                                                                               |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       | 2.0                                                                               |                                                                                   | 10.9                                                                              |                                                                                   | 2.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       | 2.8                                                                               |                                                                                   | 1.3                                                                               |                                                                                   | 1.3                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         | 0.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 5                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 1                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 0                                                                                 |                                                                                   | 3183                                                                              |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 2941                                                                              |                                                                                   | 0                                                                                 |                                                                                   | 3647                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 12                                                                                |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 678                                                                               |                                                                                   | 1460                                                                              |                                                                                   | 1460                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 2: 12th Ave & SR 198 WB EB Ramps

AM 2024+Project  
07/16/2024

|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     | L    |      |      |      |      |      |      |      |
| Lanes in Grp                        | 0    | 0    | 0    | 2    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 0    | 328  | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 0    | 1591 | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.0  | 8.9  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.0  | 8.9  | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 0    | 1591 | 0    | 0    | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 69.7 | 0.0  | 0.0  | 0.0  | 69.7 | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 0    | 437  | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.00 | 0.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 0    | 1100 | 0    | 0    | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 0.0  | 37.3 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.0  | 2.6  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 0.0  | 40.0 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.0  | 3.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.0  | 3.4  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.00 | 0.17 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 0    |
| Lane Assignment             | T    |      |      |      | T    |      |      |      |
| Lanes in Grp                | 0    | 1    | 0    | 0    | 0    | 2    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 360  | 0    | 0    | 0    | 324  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1777 | 0    | 0    | 0    | 1777 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 1377 | 0    | 0    | 0    | 2754 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.26 | 0.00 | 0.00 | 0.00 | 0.12 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 1377 | 0    | 0    | 0    | 2754 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.94 | 0.00 | 0.00 | 0.00 | 0.99 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.4  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.4  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

## HCM 7th Signalized Intersection Capacity Analysis

### 2: 12th Ave & SR 198 WB EB Ramps

AM 2024+Project  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

#### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      | R    |      |      |      |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 356  | 0    | 20   | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1748 | 0    | 1460 | 0    | 1460 | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 0.0  | 0.0  | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 0.0  | 0.0  | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.39 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1355 | 0    | 200  | 0    | 1131 | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.26 | 0.00 | 0.10 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1355 | 0    | 504  | 0    | 1131 | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 0.94 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 0.0  | 0.0  | 34.0 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.4  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 0.4  | 0.0  | 34.2 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.0  | 0.0  | 0.4  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.2  | 0.0  | 0.4  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

#### Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 10.2 |
| HCM 7th LOS                  | B    |

| Intersection                  |         |        |         |        |         |         |        |
|-------------------------------|---------|--------|---------|--------|---------|---------|--------|
| Intersection Delay, s/veh 4.9 |         |        |         |        |         |         |        |
| Intersection LOS A            |         |        |         |        |         |         |        |
| Approach                      | EB      |        | WB      |        | NB      |         | SB     |
| Entry Lanes                   | 1       |        | 1       |        | 1       |         | 1      |
| Conflicting Circle Lanes      | 1       |        | 1       |        | 1       |         | 1      |
| Adj Approach Flow, veh/h      | 413     |        | 412     |        | 0       |         | 208    |
| Demand Flow Rate, veh/h       | 421     |        | 420     |        | 0       |         | 212    |
| Vehicles Circulating, veh/h   | 351     |        | 120     |        | 316     |         | 354    |
| Vehicles Exiting, veh/h       | 213     |        | 196     |        | 310     |         | 120    |
| Ped Vol Crossing Leg, #/h     | 0       |        | 0       |        | 0       |         | 0      |
| Ped Cap Adj                   | 1.000   |        | 1.000   |        | 1.000   |         | 1.000  |
| Approach Delay, s/veh         | 4.4     |        | 4.8     |        | 0.0     |         | 5.9    |
| Approach LOS                  | A       |        | A       |        | -       |         | A      |
| Lane                          | Left    | Bypass | Left    | Bypass | Left    | Left    | Bypass |
| Designated Moves              | LT      | R      | LT      | R      | LTR     | LT      | R      |
| Assumed Moves                 | LT      |        | LT      |        | LTR     | LT      |        |
| RT Channelized                |         | Free   |         | Free   |         |         | Free   |
| Lane Util                     | 1.000   |        | 1.000   |        | 1.000   | 1.000   |        |
| Follow-Up Headway, s          | 2.609   |        | 2.609   |        | 2.609   | 2.609   |        |
| Critical Headway, s           | 4.976   |        | 4.976   |        | 4.976   | 4.976   |        |
| A (Intercept)                 | 1380    |        | 1380    |        | 1380    | 1380    |        |
| B (Slope)                     | 1.02e-3 |        | 1.02e-3 |        | 1.02e-3 | 1.02e-3 |        |
| Entry Flow, veh/h             | 275     | 146    | 354     | 66     | 0       | 210     | 2      |
| Cap Entry Lane, veh/h         | 965     | 1938   | 1221    | 1938   | 1000    | 962     | 1938   |
| Entry HV Adj Factor           | 0.982   | 0.980  | 0.980   | 0.980  | 1.000   | 0.979   | 0.980  |
| Flow Entry, veh/h             | 270     | 143    | 347     | 65     | 0       | 206     | 2      |
| Cap Entry, veh/h              | 947     | 1900   | 1196    | 1900   | 1000    | 942     | 1900   |
| V/C Ratio                     | 0.285   | 0.075  | 0.290   | 0.034  | 0.000   | 0.218   | 0.001  |
| Control Delay, s/veh          | 6.7     | 0.0    | 5.7     | 0.0    | 3.6     | 6.0     | 0.0    |
| LOS                           | A       | A      | A       | A      | A       | A       | A      |
| 95th %tile Queue, veh         | 1       | 0      | 1       | 0      | 0       | 1       | 0      |



# HCM 7th Signalized Intersection Capacity Analysis

## 4: SR 198 EB Ramps & Hanford Armona Rd

AM 2024+Project  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)        | 80                                                                                | 3                                                                                 | 81                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 310                                                                                 | 27                                                                                  | 122                                                                                 | 141                                                                                 | 0                                                                                   |
| Future Volume (veh/h)         | 80                                                                                | 3                                                                                 | 81                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 310                                                                                 | 27                                                                                  | 122                                                                                 | 141                                                                                 | 0                                                                                   |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                |                                                                                   |                                                                                   |                                                                                   | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 0                                                                                   |
| Adj Flow Rate, veh/h          | 87                                                                                | 3                                                                                 | 88                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 337                                                                                 | 29                                                                                  | 133                                                                                 | 153                                                                                 | 0                                                                                   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Cap, veh/h                    | 142                                                                               | 0                                                                                 | 126                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1400                                                                                | 120                                                                                 | 547                                                                                 | 609                                                                                 | 0                                                                                   |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Prop Arrive On Green          | 0.09                                                                              | 0.09                                                                              | 0.09                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 0.82                                                                                | 0.81                                                                                | 0.82                                                                                | 0.82                                                                                | 0.00                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 43.9                                                                              | 0.0                                                                               | 46.7                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 2.1                                                                                 | 2.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Ln Grp LOS                    | D                                                                                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     | A                                                                                   | A                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h           | 175                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 366                                                                                 |                                                                                     |                                                                                     | 286                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh         | 45.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 2.1                                                                                 |                                                                                     |                                                                                     | 2.2                                                                                 |                                                                                     |                                                                                     |
| Approach LOS                  | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Timer:                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       | 8.0                                                                               |                                                                                   | 9.0                                                                               |                                                                                   | 8.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 78.2                                                                              |                                                                                   | 11.8                                                                              |                                                                                   | 78.2                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | 5.5                                                                               |                                                                                   | 4.1                                                                               |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           | 56.5                                                                              |                                                                                   | 23.9                                                                              |                                                                                   | 56.5                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    | 4.0                                                                               |                                                                                   | 4.2                                                                               |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       | 5.9                                                                               |                                                                                   | 7.3                                                                               |                                                                                   | 7.2                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       | 1.3                                                                               |                                                                                   | 0.5                                                                               |                                                                                   | 1.3                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        | 1.00                                                                              |                                                                                   | 0.99                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         | 0.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 5                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 1                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 0                                                                                 |                                                                                   | 1641                                                                              |                                                                                   | 592                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 1698                                                                              |                                                                                   | 0                                                                                 |                                                                                   | 739                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 12                                                                                |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 146                                                                               |                                                                                   | 1460                                                                              |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 4: SR 198 EB Ramps & Hanford Armona Rd

AM 2024+Project  
07/16/2024

|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     |      |      |      | L    |      | L+T  |      |      |
| Lanes in Grp                        | 0    | 0    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 0    | 87   | 0    | 286  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 0    | 1641 | 0    | 1331 | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.0  | 4.6  | 0.0  | 1.3  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.0  | 4.6  | 0.0  | 5.2  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 0    | 1641 | 0    | 1032 | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 74.2 | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 70.3 | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 1.3  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 74.2 | 0.0  | 0.0  | 0.0  | 2.3  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 2.3  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.47 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 0    | 142  | 0    | 1156 | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.00 | 0.61 | 0.00 | 0.25 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 0    | 438  | 0    | 1156 | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 0.0  | 39.7 | 0.0  | 1.7  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.0  | 4.2  | 0.0  | 0.5  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 0.0  | 43.9 | 0.0  | 2.2  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.0  | 1.7  | 0.0  | 0.1  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.2  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.0  | 1.9  | 0.0  | 0.3  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.00 | 0.13 | 0.00 | 0.06 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 0    |
| Lane Assignment             |      |      |      |      |      |      |      |      |
| Lanes in Grp                | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 4: SR 198 EB Ramps & Hanford Armona Rd

AM 2024+Project  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      |      |      |      |      |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 366  | 0    | 88   | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1844 | 0    | 1460 | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 3.9  | 0.0  | 5.3  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 3.9  | 0.0  | 5.3  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.08 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1521 | 0    | 126  | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.24 | 0.00 | 0.70 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1521 | 0    | 389  | 0    | 0    | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 1.7  | 0.0  | 40.0 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.4  | 0.0  | 6.8  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 2.1  | 0.0  | 46.7 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.2  | 0.0  | 1.8  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.2  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.3  | 0.0  | 2.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.03 | 0.00 | 0.14 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 11.3 |
| HCM 7th LOS                  | B    |

| Intersection              |        |      |      |        |       |      |        |       |       |        |       |       |
|---------------------------|--------|------|------|--------|-------|------|--------|-------|-------|--------|-------|-------|
| Int Delay, s/veh          | 1.4    |      |      |        |       |      |        |       |       |        |       |       |
| Movement                  | EBL    | EBT  | EBR  | WBL    | WBT   | WBR  | NBL    | NBT   | NBR   | SBL    | SBT   | SBR   |
| Lane Configurations       |        | ↔    |      |        | ↔     |      |        | ↔     |       |        | ↔     |       |
| Traffic Vol, veh/h        | 0      | 189  | 34   | 21     | 311   | 0    | 37     | 0     | 13    | 0      | 0     | 0     |
| Future Vol, veh/h         | 0      | 189  | 34   | 21     | 311   | 0    | 37     | 0     | 13    | 0      | 0     | 0     |
| Conflicting Peds, #/hr    | 0      | 0    | 0    | 0      | 0     | 0    | 0      | 0     | 0     | 0      | 0     | 0     |
| Sign Control              | Free   | Free | Free | Free   | Free  | Free | Stop   | Stop  | Stop  | Stop   | Stop  | Stop  |
| RT Channelized            | -      | -    | None | -      | -     | None | -      | -     | None  | -      | -     | None  |
| Storage Length            | -      | -    | -    | -      | -     | -    | -      | -     | -     | -      | -     | -     |
| Veh in Median Storage, #  | -      | 0    | -    | -      | 0     | -    | -      | 0     | -     | -      | 0     | -     |
| Grade, %                  | -      | 0    | -    | -      | 0     | -    | -      | 0     | -     | -      | 0     | -     |
| Peak Hour Factor          | 92     | 92   | 92   | 92     | 92    | 92   | 92     | 92    | 92    | 92     | 92    | 92    |
| Heavy Vehicles, %         | 2      | 2    | 2    | 2      | 2     | 2    | 2      | 2     | 2     | 2      | 2     | 2     |
| Mvmt Flow                 | 0      | 205  | 37   | 23     | 338   | 0    | 40     | 0     | 14    | 0      | 0     | 0     |
| Major/Minor               | Major1 |      |      | Major2 |       |      | Minor1 |       |       | Minor2 |       |       |
| Conflicting Flow All      | 338    | 0    | 0    | 242    | 0     | 0    | 608    | 608   | 224   | 589    | 626   | 338   |
| Stage 1                   | -      | -    | -    | -      | -     | -    | 224    | 224   | -     | 384    | 384   | -     |
| Stage 2                   | -      | -    | -    | -      | -     | -    | 384    | 384   | -     | 205    | 242   | -     |
| Critical Hdwy             | 4.12   | -    | -    | 4.12   | -     | -    | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1       | -      | -    | -    | -      | -     | -    | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2       | -      | -    | -    | -      | -     | -    | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy            | 2.218  | -    | -    | 2.218  | -     | -    | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver        | 1221   | -    | -    | 1324   | -     | -    | 408    | 411   | 816   | 420    | 401   | 704   |
| Stage 1                   | -      | -    | -    | -      | -     | -    | 779    | 718   | -     | 639    | 612   | -     |
| Stage 2                   | -      | -    | -    | -      | -     | -    | 639    | 612   | -     | 797    | 705   | -     |
| Platoon blocked, %        | -      | -    | -    | -      | -     | -    | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver        | 1221   | -    | -    | 1324   | -     | -    | 399    | 402   | 816   | 404    | 392   | 704   |
| Mov Cap-2 Maneuver        | -      | -    | -    | -      | -     | -    | 399    | 402   | -     | 404    | 392   | -     |
| Stage 1                   | -      | -    | -    | -      | -     | -    | 779    | 718   | -     | 626    | 599   | -     |
| Stage 2                   | -      | -    | -    | -      | -     | -    | 626    | 599   | -     | 783    | 705   | -     |
| Approach                  | EB     |      |      | WB     |       |      | NB     |       |       | SB     |       |       |
| HCM Control Delay, s/v    | 0      |      |      | 0.49   |       |      | 13.86  |       |       | 0      |       |       |
| HCM LOS                   |        |      |      |        |       |      | B      |       |       | A      |       |       |
| Minor Lane/Major Mvmt     | NBLn1  | EBL  | EBT  | EBR    | WBL   | WBT  | WBR    | SBLn1 |       |        |       |       |
| Capacity (veh/h)          | 460    | 1221 | -    | -      | 114   | -    | -      | -     |       |        |       |       |
| HCM Lane V/C Ratio        | 0.118  | -    | -    | -      | 0.017 | -    | -      | -     |       |        |       |       |
| HCM Control Delay (s/veh) | 13.9   | 0    | -    | -      | 7.8   | 0    | -      | 0     |       |        |       |       |
| HCM Lane LOS              | B      | A    | -    | -      | A     | A    | -      | A     |       |        |       |       |
| HCM 95th %tile Q(veh)     | 0.4    | 0    | -    | -      | 0.1   | -    | -      | -     |       |        |       |       |

# HCM 7th Signalized Intersection Capacity Analysis

## 6: 12th Ave & Hanford Armona Rd

AM 2024+Project  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |  |  |  |  |  |   |  |  |  |  |  |
| Traffic Volume (veh/h)        | 134                                                                               | 193                                                                               | 51                                                                                | 28                                                                                | 180                                                                               | 202                                                                               | 80                                                                                  | 332                                                                                 | 32                                                                                  | 97                                                                                  | 176                                                                                 | 54                                                                                  |
| Future Volume (veh/h)         | 134                                                                               | 193                                                                               | 51                                                                                | 28                                                                                | 180                                                                               | 202                                                                               | 80                                                                                  | 332                                                                                 | 32                                                                                  | 97                                                                                  | 176                                                                                 | 54                                                                                  |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                                | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 146                                                                               | 210                                                                               | 55                                                                                | 30                                                                                | 196                                                                               | 220                                                                               | 87                                                                                  | 361                                                                                 | 35                                                                                  | 105                                                                                 | 191                                                                                 | 59                                                                                  |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Cap, veh/h                    | 202                                                                               | 517                                                                               | 403                                                                               | 66                                                                                | 361                                                                               | 282                                                                               | 474                                                                                 | 1802                                                                                | 174                                                                                 | 226                                                                                 | 585                                                                                 | 175                                                                                 |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.33                                                                                | 0.33                                                                                | 0.33                                                                                |
| Prop Arrive On Green          | 0.12                                                                              | 0.28                                                                              | 0.28                                                                              | 0.04                                                                              | 0.19                                                                              | 0.19                                                                              | 0.29                                                                                | 0.55                                                                                | 0.53                                                                                | 0.07                                                                                | 0.07                                                                                | 0.07                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 43.9                                                                              | 27.1                                                                              | 4.7                                                                               | 47.0                                                                              | 34.0                                                                              | 40.9                                                                              | 24.2                                                                                | 10.6                                                                                | 10.7                                                                                | 49.0                                                                                | 37.7                                                                                | 38.1                                                                                |
| Ln Grp LOS                    | D                                                                                 | C                                                                                 | A                                                                                 | D                                                                                 | C                                                                                 | D                                                                                 | C                                                                                   | B                                                                                   | B                                                                                   | D                                                                                   | D                                                                                   | D                                                                                   |
| Approach Vol, veh/h           |                                                                                   | 411                                                                               |                                                                                   |                                                                                   | 446                                                                               |                                                                                   |                                                                                     | 483                                                                                 |                                                                                     |                                                                                     | 355                                                                                 |                                                                                     |
| Approach Delay, s/veh         |                                                                                   | 30.1                                                                              |                                                                                   |                                                                                   | 38.3                                                                              |                                                                                   |                                                                                     | 13.1                                                                                |                                                                                     |                                                                                     | 41.2                                                                                |                                                                                     |
| Approach LOS                  |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer:                        |                                                                                   | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                   | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  |                                                                                   | 2                                                                                 | 3                                                                                 | 4                                                                                 | 6                                                                                 | 5                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       |                                                                                   | 4.0                                                                               | 2.0                                                                               | 3.0                                                                               | 6.4                                                                               | 2.0                                                                               | 2.0                                                                                 | 3.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      |                                                                                   | 53.5                                                                              | 7.6                                                                               | 28.9                                                                              | 23.5                                                                              | 30.0                                                                              | 15.1                                                                                | 21.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       |                                                                                   | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                                 | 5.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           |                                                                                   | 37.1                                                                              | 4.7                                                                               | 31.7                                                                              | 23.1                                                                              | 8.5                                                                               | 13.5                                                                                | 22.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    |                                                                                   | 4.0                                                                               | 4.1                                                                               | 4.1                                                                               | 4.5                                                                               | 4.1                                                                               | 4.1                                                                                 | 4.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       |                                                                                   | 7.1                                                                               | 3.6                                                                               | 10.2                                                                              | 17.3                                                                              | 5.6                                                                               | 9.7                                                                                 | 14.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       |                                                                                   | 1.3                                                                               | 0.0                                                                               | 0.8                                                                               | 0.7                                                                               | 0.0                                                                               | 0.1                                                                                 | 1.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        |                                                                                   | 1.00                                                                              | 0.53                                                                              | 1.00                                                                              | 1.00                                                                              | 0.89                                                                              | 0.97                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         |                                                                                   | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.55                                                                              | 1.00                                                                              | 1.00                                                                                | 0.18                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 3                                                                                 |                                                                                   | 1                                                                                 | 5                                                                                 | 7                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 1641                                                                              |                                                                                   | 910                                                                               | 1641                                                                              | 1641                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 | 6                                                                                 |                                                                                   |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 3275                                                                              |                                                                                   | 1870                                                                              | 2693                                                                              |                                                                                   |                                                                                     | 1870                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 12                                                                                |                                                                                   | 14                                                                                | 16                                                                                |                                                                                     |                                                                                     |                                                                                     | 18                                                                                  |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 316                                                                               |                                                                                   | 1460                                                                              | 808                                                                               |                                                                                     |                                                                                     |                                                                                     | 1460                                                                                |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 0                                                                                 | 3                                                                                 | 0                                                                                 | 1                                                                                 | 5                                                                                 | 7                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 6: 12th Ave & Hanford Armona Rd

AM 2024+Project  
07/16/2024

| Lane Assignment                     | L (Prot) |      |      |      | L    | L (Prot) | L (Prot) |      |
|-------------------------------------|----------|------|------|------|------|----------|----------|------|
| Lanes in Grp                        | 0        | 0    | 1    | 0    | 1    | 1        | 1        | 0    |
| Grp Vol (v), veh/h                  | 0        | 0    | 30   | 0    | 105  | 87       | 146      | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0        | 0    | 1641 | 0    | 910  | 1641     | 1641     | 0    |
| Q Serve Time (g_s), s               | 0.0      | 0.0  | 1.6  | 0.0  | 10.2 | 3.6      | 7.7      | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0      | 0.0  | 1.6  | 0.0  | 15.3 | 3.6      | 7.7      | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0        | 0    | 0    | 0    | 910  | 0        | 0        | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0        | 0    | 0    | 0    | 0    | 0        | 0        | 0    |
| Perm LT Eff Green (g_p), s          | 0.0      | 0.0  | 0.0  | 0.0  | 19.5 | 0.0      | 0.0      | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0      | 0.0  | 0.0  | 0.0  | 14.5 | 0.0      | 0.0      | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0      | 0.0  | 0.0  | 0.0  | 10.2 | 0.0      | 0.0      | 0.0  |
| Time to First Blk (g_f), s          | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00     | 0.00 | 1.00 | 0.00 | 1.00 | 1.00     | 1.00     | 0.00 |
| Lane Grp Cap (c), veh/h             | 0        | 0    | 66   | 0    | 226  | 474      | 202      | 0    |
| V/C Ratio (X)                       | 0.00     | 0.00 | 0.46 | 0.00 | 0.46 | 0.18     | 0.72     | 0.00 |
| Avail Cap (c_a), veh/h              | 0        | 0    | 113  | 0    | 277  | 474      | 273      | 0    |
| Upstream Filter (I)                 | 0.00     | 0.00 | 0.99 | 0.00 | 1.00 | 0.86     | 1.00     | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0      | 0.0  | 42.2 | 0.0  | 42.3 | 24.0     | 38.0     | 0.0  |
| Incr Delay (d2), s/veh              | 0.0      | 0.0  | 4.8  | 0.0  | 6.7  | 0.2      | 6.0      | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0  |
| Control Delay (d), s/veh            | 0.0      | 0.0  | 47.0 | 0.0  | 49.0 | 24.2     | 43.9     | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0      | 0.0  | 0.6  | 0.0  | 2.4  | 1.3      | 2.9      | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0      | 0.0  | 0.1  | 0.0  | 0.4  | 0.0      | 0.3      | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00     | 0.00 | 1.00 | 0.00 | 1.00 | 1.00     | 1.00     | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0      | 0.0  | 0.7  | 0.0  | 2.9  | 1.3      | 3.2      | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00     | 0.00 | 0.35 | 0.00 | 0.36 | 0.16     | 0.54     | 0.00 |
| Initial Q (Qb), veh                 | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0  |
| Sat Delay (ds), s/veh               | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0  |
| Sat Q (Qs), veh                     | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0  |
| Sat Cap (cs), veh/h                 | 0        | 0    | 0    | 0    | 0    | 0        | 0        | 0    |
| Initial Q Clear Time (tc), h        | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 6    | 0    | 0    | 8    |
| Lane Assignment             | T    |      | T    |      | T    | T    |      |      |
| Lanes in Grp                | 0    | 1    | 0    | 1    | 1    | 0    | 0    | 1    |
| Grp Vol (v), veh/h          | 0    | 195  | 0    | 210  | 124  | 0    | 0    | 196  |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1777 | 0    | 1870 | 1777 | 0    | 0    | 1870 |
| Q Serve Time (g_s), s       | 0.0  | 5.0  | 0.0  | 8.2  | 6.0  | 0.0  | 0.0  | 8.5  |
| Cycle Q Clear Time (g_c), s | 0.0  | 5.0  | 0.0  | 8.2  | 6.0  | 0.0  | 0.0  | 8.5  |
| Lane Grp Cap (c), veh/h     | 0    | 978  | 0    | 517  | 386  | 0    | 0    | 361  |
| V/C Ratio (X)               | 0.00 | 0.20 | 0.00 | 0.41 | 0.32 | 0.00 | 0.00 | 0.54 |
| Avail Cap (c_a), veh/h      | 0    | 978  | 0    | 690  | 486  | 0    | 0    | 507  |
| Upstream Filter (I)         | 0.00 | 0.86 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.99 |
| Uniform Delay (d1), s/veh   | 0.0  | 10.2 | 0.0  | 26.6 | 35.5 | 0.0  | 0.0  | 32.7 |
| Incr Delay (d2), s/veh      | 0.0  | 0.4  | 0.0  | 0.5  | 2.2  | 0.0  | 0.0  | 1.3  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 10.6 | 0.0  | 27.1 | 37.7 | 0.0  | 0.0  | 34.0 |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 1.6  | 0.0  | 3.3  | 2.5  | 0.0  | 0.0  | 3.5  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 6: 12th Ave & Hanford Armona Rd

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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.1  | 0.0  | 0.1  | 0.2  | 0.0  | 0.0  | 0.1  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 1.7  | 0.0  | 3.4  | 2.7  | 0.0  | 0.0  | 3.7  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.02 | 0.00 | 0.02 | 0.05 | 0.00 | 0.00 | 0.02 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 16   | 0    | 0    | 18   |
| Lane Assignment                  | T+R  |      | R    |      | T+R  |      | R    |      |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 1    | 0    | 0    | 1    |
| Grp Vol (v), veh/h               | 0    | 201  | 0    | 55   | 126  | 0    | 0    | 220  |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1814 | 0    | 1460 | 1725 | 0    | 0    | 1460 |
| Q Serve Time (g_s), s            | 0.0  | 5.1  | 0.0  | 1.1  | 6.3  | 0.0  | 0.0  | 12.9 |
| Cycle Q Clear Time (g_c), s      | 0.0  | 5.1  | 0.0  | 1.1  | 6.3  | 0.0  | 0.0  | 12.9 |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.17 | 0.00 | 1.00 | 0.47 | 0.00 | 0.00 | 1.00 |
| Lane Grp Cap (c), veh/h          | 0    | 998  | 0    | 403  | 374  | 0    | 0    | 282  |
| V/C Ratio (X)                    | 0.00 | 0.20 | 0.00 | 0.14 | 0.34 | 0.00 | 0.00 | 0.78 |
| Avail Cap (c_a), veh/h           | 0    | 998  | 0    | 539  | 471  | 0    | 0    | 396  |
| Upstream Filter (I)              | 0.00 | 0.86 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.99 |
| Uniform Delay (d1), s/veh        | 0.0  | 10.3 | 0.0  | 4.6  | 35.7 | 0.0  | 0.0  | 34.5 |
| Incr Delay (d2), s/veh           | 0.0  | 0.4  | 0.0  | 0.2  | 2.4  | 0.0  | 0.0  | 6.4  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 10.7 | 0.0  | 4.7  | 38.1 | 0.0  | 0.0  | 40.9 |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 1.6  | 0.0  | 0.8  | 2.6  | 0.0  | 0.0  | 4.2  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.1  | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  | 0.5  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 1.8  | 0.0  | 0.8  | 2.8  | 0.0  | 0.0  | 4.7  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.02 | 0.00 | 0.20 | 0.05 | 0.00 | 0.00 | 2.38 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 29.7 |
| HCM 7th LOS                  | C    |

# HCM 7th Signalized Intersection Capacity Analysis

## 7: 11th Ave & Hanford Armona Rd

AM 2024+Project  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |  |  |  |  |                                                                                   |   |  |  |  |  |  |
| Traffic Volume (veh/h)        | 180                                                                               | 195                                                                               | 61                                                                                | 81                                                                                | 122                                                                               | 69                                                                                | 35                                                                                  | 286                                                                                 | 87                                                                                  | 48                                                                                  | 218                                                                                 | 90                                                                                  |
| Future Volume (veh/h)         | 180                                                                               | 195                                                                               | 61                                                                                | 81                                                                                | 122                                                                               | 69                                                                                | 35                                                                                  | 286                                                                                 | 87                                                                                  | 48                                                                                  | 218                                                                                 | 90                                                                                  |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         | No                                                                                |                                                                                   |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                                | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 196                                                                               | 212                                                                               | 66                                                                                | 88                                                                                | 133                                                                               | 75                                                                                | 38                                                                                  | 311                                                                                 | 95                                                                                  | 52                                                                                  | 237                                                                                 | 98                                                                                  |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Cap, veh/h                    | 738                                                                               | 1226                                                                              | 957                                                                               | 700                                                                               | 736                                                                               | 415                                                                               | 222                                                                                 | 479                                                                                 | 374                                                                                 | 177                                                                                 | 479                                                                                 | 374                                                                                 |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Prop Arrive On Green          | 0.66                                                                              | 0.66                                                                              | 0.66                                                                              | 0.66                                                                              | 0.66                                                                              | 0.64                                                                              | 0.26                                                                                | 0.26                                                                                | 0.26                                                                                | 0.26                                                                                | 0.26                                                                                | 0.26                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 9.3                                                                               | 6.3                                                                               | 5.7                                                                               | 7.8                                                                               | 0.0                                                                               | 6.5                                                                               | 34.4                                                                                | 31.4                                                                                | 27.0                                                                                | 39.0                                                                                | 29.3                                                                                | 27.1                                                                                |
| Ln Grp LOS                    | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   | A                                                                                 | C                                                                                   | C                                                                                   | C                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h           | 474                                                                               |                                                                                   |                                                                                   |                                                                                   | 296                                                                               |                                                                                   |                                                                                     |                                                                                     | 444                                                                                 |                                                                                     | 387                                                                                 |                                                                                     |
| Approach Delay, s/veh         | 7.5                                                                               |                                                                                   |                                                                                   |                                                                                   | 6.9                                                                               |                                                                                   |                                                                                     |                                                                                     | 30.7                                                                                |                                                                                     | 30.1                                                                                |                                                                                     |
| Approach LOS                  | A                                                                                 |                                                                                   |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     | C                                                                                   |                                                                                     |
| Timer:                        |                                                                                   | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                   | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                   |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Case No                       |                                                                                   |                                                                                   | 5.0                                                                               |                                                                                   | 5.0                                                                               |                                                                                   | 5.0                                                                                 |                                                                                     | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      |                                                                                   |                                                                                   | 27.0                                                                              |                                                                                   | 63.0                                                                              |                                                                                   | 27.0                                                                                |                                                                                     | 63.0                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       |                                                                                   |                                                                                   | 5.5                                                                               |                                                                                   | 5.5                                                                               |                                                                                   | 5.5                                                                                 |                                                                                     | 5.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           |                                                                                   |                                                                                   | 34.5                                                                              |                                                                                   | 44.5                                                                              |                                                                                   | 34.5                                                                                |                                                                                     | 44.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    |                                                                                   |                                                                                   | 4.2                                                                               |                                                                                   | 4.4                                                                               |                                                                                   | 4.3                                                                                 |                                                                                     | 4.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       |                                                                                   |                                                                                   | 15.4                                                                              |                                                                                   | 14.0                                                                              |                                                                                   | 20.3                                                                                |                                                                                     | 9.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       |                                                                                   |                                                                                   | 1.6                                                                               |                                                                                   | 2.0                                                                               |                                                                                   | 1.3                                                                                 |                                                                                     | 1.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        |                                                                                   |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         |                                                                                   |                                                                                   | 0.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                   | 0.01                                                                                |                                                                                     | 0.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 5                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 1                                                                                   |                                                                                     | 3                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 963                                                                               |                                                                                   | 1081                                                                              |                                                                                   | 902                                                                                 |                                                                                     | 1014                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                   |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 1870                                                                              |                                                                                   | 1870                                                                              |                                                                                   | 1870                                                                                |                                                                                     | 1123                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 12                                                                                |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                  |                                                                                     | 18                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 1460                                                                              |                                                                                   | 1460                                                                              |                                                                                   | 1460                                                                                |                                                                                     | 633                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                   | 0                                                                                   | 3                                                                                   |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report



# HCM 7th Signalized Intersection Capacity Analysis

## 7: 11th Ave & Hanford Armona Rd

AM 2024+Project  
07/16/2024

|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     |      | L    |      | L    |      | L    |      | L    |
| Lanes in Grp                        | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 1    |
| Grp Vol (v), veh/h                  | 0    | 38   | 0    | 196  | 0    | 52   | 0    | 88   |
| Grp Sat Flow (s), veh/h/ln          | 0    | 963  | 0    | 1081 | 0    | 902  | 0    | 1014 |
| Q Serve Time (g_s), s               | 0.0  | 3.2  | 0.0  | 7.8  | 0.0  | 4.9  | 0.0  | 3.3  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 12.9 | 0.0  | 12.0 | 0.0  | 18.3 | 0.0  | 7.3  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 963  | 0    | 1081 | 0    | 902  | 0    | 1014 |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 23.0 | 0.0  | 59.0 | 0.0  | 23.0 | 0.0  | 59.0 |
| Perm LT Serve Time (g_u), s         | 0.0  | 13.3 | 0.0  | 54.7 | 0.0  | 9.7  | 0.0  | 55.0 |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 3.2  | 0.0  | 7.8  | 0.0  | 4.9  | 0.0  | 3.3  |
| Time to First Blk (g_f), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Lane Grp Cap (c), veh/h             | 0    | 222  | 0    | 738  | 0    | 177  | 0    | 700  |
| V/C Ratio (X)                       | 0.00 | 0.17 | 0.00 | 0.27 | 0.00 | 0.29 | 0.00 | 0.13 |
| Avail Cap (c_a), veh/h              | 0    | 361  | 0    | 738  | 0    | 307  | 0    | 700  |
| Upstream Filter (I)                 | 0.00 | 1.00 | 0.00 | 0.94 | 0.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 34.0 | 0.0  | 8.4  | 0.0  | 38.0 | 0.0  | 7.5  |
| Incr Delay (d2), s/veh              | 0.0  | 0.4  | 0.0  | 0.8  | 0.0  | 0.9  | 0.0  | 0.4  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 34.4 | 0.0  | 9.3  | 0.0  | 39.0 | 0.0  | 7.8  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.7  | 0.0  | 1.4  | 0.0  | 1.0  | 0.0  | 0.5  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.1  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.7  | 0.0  | 1.6  | 0.0  | 1.1  | 0.0  | 0.6  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.16 | 0.00 | 0.40 | 0.00 | 0.38 | 0.00 | 0.16 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 8    |
| Lane Assignment             |      | T    |      | T    |      | T    |      |      |
| Lanes in Grp                | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 311  | 0    | 212  | 0    | 237  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1870 | 0    | 1870 | 0    | 1870 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 13.4 | 0.0  | 4.0  | 0.0  | 9.7  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 13.4 | 0.0  | 4.0  | 0.0  | 9.7  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 479  | 0    | 1226 | 0    | 479  | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.65 | 0.00 | 0.17 | 0.00 | 0.50 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 748  | 0    | 1226 | 0    | 748  | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 1.00 | 0.00 | 0.94 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 29.9 | 0.0  | 6.0  | 0.0  | 28.5 | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 1.5  | 0.0  | 0.3  | 0.0  | 0.8  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 31.4 | 0.0  | 6.3  | 0.0  | 29.3 | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 5.4  | 0.0  | 1.1  | 0.0  | 4.0  | 0.0  | 0.0  |

Baseline

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# HCM 7th Signalized Intersection Capacity Analysis 7: 11th Ave & Hanford Armona Rd

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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.2  | 0.0  | 0.1  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 5.6  | 0.0  | 1.2  | 0.0  | 4.1  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.08 | 0.00 | 0.01 | 0.00 | 0.04 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 18   |
| Lane Assignment                  |      | R    |      | R    |      | R    |      | T+R  |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 1    |
| Grp Vol (v), veh/h               | 0    | 95   | 0    | 66   | 0    | 98   | 0    | 208  |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1460 | 0    | 1460 | 0    | 1460 | 0    | 1756 |
| Q Serve Time (g_s), s            | 0.0  | 4.7  | 0.0  | 1.5  | 0.0  | 4.8  | 0.0  | 4.2  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 4.7  | 0.0  | 1.5  | 0.0  | 4.8  | 0.0  | 4.2  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.36 |
| Lane Grp Cap (c), veh/h          | 0    | 374  | 0    | 957  | 0    | 374  | 0    | 1151 |
| V/C Ratio (X)                    | 0.00 | 0.25 | 0.00 | 0.07 | 0.00 | 0.26 | 0.00 | 0.18 |
| Avail Cap (c_a), veh/h           | 0    | 584  | 0    | 957  | 0    | 584  | 0    | 1151 |
| Upstream Filter (I)              | 0.00 | 1.00 | 0.00 | 0.94 | 0.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 26.7 | 0.0  | 5.6  | 0.0  | 26.7 | 0.0  | 6.2  |
| Incr Delay (d2), s/veh           | 0.0  | 0.4  | 0.0  | 0.1  | 0.0  | 0.4  | 0.0  | 0.3  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 27.0 | 0.0  | 5.7  | 0.0  | 27.1 | 0.0  | 6.5  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 1.5  | 0.0  | 0.3  | 0.0  | 1.5  | 0.0  | 1.1  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 1.5  | 0.0  | 0.4  | 0.0  | 1.6  | 0.0  | 1.2  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.39 | 0.00 | 0.18 | 0.00 | 0.20 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 19.3 |
| HCM 7th LOS                  | B    |

# HCM 7th Signalized Intersection Capacity Analysis 8: 12th Ave & Hume Ave

AM 2024+Project  
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|                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|---|---|---|
|                               |  |  |  |  |  |  |      |   |   |   |
| Movement                      | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |      |   |   |   |
| Lane Configurations           |  |  |  |                                                                                   |  |  |      |   |   |   |
| Traffic Volume (veh/h)        | 19                                                                                | 227                                                                               | 94                                                                                | 6                                                                                 | 90                                                                                | 106                                                                               |      |   |   |   |
| Future Volume (veh/h)         | 19                                                                                | 227                                                                               | 94                                                                                | 6                                                                                 | 90                                                                                | 106                                                                               |      |   |   |   |
| Number                        | 3                                                                                 | 18                                                                                | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 |      |   |   |   |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |      |   |   |   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |   |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |      |   |   |   |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |   |
| Work Zone On Approach         | No                                                                                |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |      |   |   |   |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              |      |   |   |   |
| Adj Flow Rate, veh/h          | 21                                                                                | 247                                                                               | 102                                                                               | 7                                                                                 | 98                                                                                | 115                                                                               |      |   |   |   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |      |   |   |   |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |      |   |   |   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |      |   |   |   |
| Cap, veh/h                    | 323                                                                               | 288                                                                               | 1235                                                                              | 85                                                                                | 903                                                                               | 1335                                                                              |      |   |   |   |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |   |
| Prop Arrive On Green          | 0.20                                                                              | 0.20                                                                              | 0.71                                                                              | 0.71                                                                              | 0.71                                                                              | 0.71                                                                              |      |   |   |   |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Ln Grp Delay, s/veh           | 29.5                                                                              | 42.2                                                                              | 0.0                                                                               | 4.0                                                                               | 4.8                                                                               | 4.0                                                                               |      |   |   |   |
| Ln Grp LOS                    | C                                                                                 | D                                                                                 |                                                                                   | A                                                                                 | A                                                                                 | A                                                                                 |      |   |   |   |
| Approach Vol, veh/h           | 268                                                                               |                                                                                   | 109                                                                               |                                                                                   |                                                                                   | 213                                                                               |      |   |   |   |
| Approach Delay, s/veh         | 41.2                                                                              |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                   | 4.4                                                                               |      |   |   |   |
| Approach LOS                  | D                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |      |   |   |   |
| Timer:                        |                                                                                   | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6    | 7 | 8 |   |
| Assigned Phs                  |                                                                                   |                                                                                   | 2                                                                                 | 8                                                                                 |                                                                                   |                                                                                   | 6    |   |   |   |
| Case No                       |                                                                                   |                                                                                   | 8.0                                                                               | 9.0                                                                               |                                                                                   |                                                                                   | 6.0  |   |   |   |
| Phs Duration (G+Y+Rc), s      |                                                                                   |                                                                                   | 68.3                                                                              | 21.7                                                                              |                                                                                   |                                                                                   | 68.3 |   |   |   |
| Change Period (Y+Rc), s       |                                                                                   |                                                                                   | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                   | 4.0  |   |   |   |
| Max Green (Gmax), s           |                                                                                   |                                                                                   | 36.0                                                                              | 46.0                                                                              |                                                                                   |                                                                                   | 36.0 |   |   |   |
| Max Allow Headway (MAH), s    |                                                                                   |                                                                                   | 4.0                                                                               | 4.3                                                                               |                                                                                   |                                                                                   | 4.2  |   |   |   |
| Max Q Clear (g_c+I1), s       |                                                                                   |                                                                                   | 3.6                                                                               | 16.7                                                                              |                                                                                   |                                                                                   | 6.1  |   |   |   |
| Green Ext Time (g_e), s       |                                                                                   |                                                                                   | 0.3                                                                               | 1.1                                                                               |                                                                                   |                                                                                   | 0.8  |   |   |   |
| Prob of Phs Call (p_c)        |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 1.00 |   |   |   |
| Prob of Max Out (p_x)         |                                                                                   |                                                                                   | 0.00                                                                              | 0.00                                                                              |                                                                                   |                                                                                   | 0.00 |   |   |   |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 5                                                                                 | 3                                                                                 |                                                                                   |                                                                                   | 1    |   |   |   |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 0                                                                                 | 1641                                                                              |                                                                                   |                                                                                   | 1183 |   |   |   |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 2                                                                                 | 8                                                                                 |                                                                                   |                                                                                   | 6    |   |   |   |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 1730                                                                              | 0                                                                                 |                                                                                   |                                                                                   | 1870 |   |   |   |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 12                                                                                | 18                                                                                |                                                                                   |                                                                                   | 16   |   |   |   |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 119                                                                               | 1460                                                                              |                                                                                   |                                                                                   | 0    |   |   |   |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 0                                                                                 | 5                                                                                 | 3                                                                                 | 0                                                                                 | 0    | 1 | 0 | 0 |

Baseline

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# HCM 7th Signalized Intersection Capacity Analysis

## 8: 12th Ave & Hume Ave

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|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     |      |      | L    |      | L    |      |      |      |
| Lanes in Grp                        | 0    | 0    | 1    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 21   | 0    | 0    | 98   | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 1641 | 0    | 0    | 1183 | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.9  | 0.0  | 0.0  | 2.5  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.9  | 0.0  | 0.0  | 4.1  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 1641 | 0    | 0    | 1183 | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 64.3 | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 62.6 | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 2.5  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 64.3 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 323  | 0    | 0    | 903  | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 | 0.11 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 839  | 0    | 0    | 903  | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.99 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 29.4 | 0.0  | 0.0  | 4.5  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 29.5 | 0.0  | 0.0  | 4.8  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  | 0.4  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  | 0.4  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 8    | 0    | 0    | 6    | 0    | 0    |
| Lane Assignment             |      |      |      |      | T    |      |      |      |
| Lanes in Grp                | 0    | 0    | 0    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 0    | 0    | 0    | 0    | 115  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 0    | 0    | 0    | 0    | 1870 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 1.7  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 1.7  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 0    | 0    | 0    | 0    | 1335 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.09 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 0    | 0    | 0    | 0    | 1335 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.99 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 3.9  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 4.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.4  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 8: 12th Ave & Hume Ave

AM 2024+Project  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.4  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 18   | 0    | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      |      |      |      |      |
| Lanes in Grp                     | 0    | 1    | 1    | 0    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 109  | 247  | 0    | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1849 | 1460 | 0    | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 1.6  | 14.7 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 1.6  | 14.7 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.06 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1320 | 288  | 0    | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.08 | 0.86 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1320 | 746  | 0    | 0    | 0    | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 3.9  | 34.9 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.1  | 7.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 4.0  | 42.2 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.4  | 4.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.0  | 0.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.4  | 5.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.01 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 21.1 |
| HCM 7th LOS                  | C    |



# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

AM 2026  
07/16/2024

| Movement                            | EBL | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|-------------------------------------|-----|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations                 |     |      |      | ↰    |      | ↰    | ↰    | ↰    |      |      | ↰    | ↰    |
| Traffic Volume (veh/h)              | 0   | 0    | 0    | 54   | 0    | 410  | 30   | 797  | 0    | 0    | 524  | 286  |
| Future Volume (veh/h)               | 0   | 0    | 0    | 54   | 0    | 410  | 30   | 797  | 0    | 0    | 524  | 286  |
| Number                              |     |      |      | 3    | 8    | 18   | 5    | 2    | 12   | 1    | 6    | 16   |
| Initial Q, veh                      |     |      |      | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Lane Width Adj.                     |     |      |      | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped-Bike Adj (A <sub>pbT</sub> )    |     |      |      | 1.00 |      | 1.00 | 1.00 |      | 1.00 | 1.00 |      | 1.00 |
| Parking Bus Adj                     |     |      |      | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach               |     |      |      | No   |      |      |      | No   |      |      |      | No   |
| Lanes Open During Work Zone         |     |      |      |      |      |      |      |      |      |      |      |      |
| Adj Sat Flow, veh/h/ln              |     |      |      | 1723 | 0    | 1723 | 1723 | 1870 | 0    | 0    | 1870 | 1723 |
| Adj Flow Rate, veh/h                |     |      |      | 59   | 0    | 446  | 33   | 866  | 0    | 0    | 570  | 311  |
| Peak Hour Factor                    |     |      |      | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, %                |     |      |      | 2    | 0    | 2    | 2    | 2    | 0    | 0    | 2    | 2    |
| Opposing Right Turn Influence       |     |      |      | Yes  |      |      | Yes  |      |      | No   |      |      |
| Cap, veh/h                          |     |      |      | 669  | 0    | 540  | 41   | 2495 | 0    | 0    | 3231 | 924  |
| HCM Platoon Ratio                   |     |      |      | 1.00 | 1.00 | 1.00 | 0.33 | 0.33 | 1.00 | 1.00 | 1.00 | 1.00 |
| Prop Arrive On Green                |     |      |      | 0.21 | 0.00 | 0.21 | 0.01 | 0.23 | 0.00 | 0.00 | 0.63 | 0.63 |
| Unsig. Movement Delay               |     |      |      |      |      |      |      |      |      |      |      |      |
| Ln Grp Delay, s/veh                 |     |      |      | 28.7 | 0.0  | 38.1 | 71.9 | 17.7 | 0.0  | 0.0  | 7.0  | 8.7  |
| Ln Grp LOS                          |     |      |      | C    |      | D    | E    | B    |      |      | A    | A    |
| Approach Vol, veh/h                 |     |      |      | 505  |      |      |      | 899  |      |      |      | 881  |
| Approach Delay, s/veh               |     |      |      | 37.0 |      |      |      | 19.7 |      |      |      | 7.6  |
| Approach LOS                        |     |      |      | D    |      |      |      | B    |      |      |      | A    |
| Timer:                              | 1   | 2    | 3    | 4    | 5    | 6    | 7    | 8    |      |      |      |      |
| Assigned Phs                        |     | 2    | 8    |      | 5    | 6    |      |      |      |      |      |      |
| Case No                             |     | 4.0  | 9.0  |      | 2.0  | 7.0  |      |      |      |      |      |      |
| Phs Duration (G+Y+Rc), s            |     | 67.2 | 22.8 |      | 6.2  | 60.9 |      |      |      |      |      |      |
| Change Period (Y+Rc), s             |     | 5.5  | 4.0  |      | 4.0  | 5.5  |      |      |      |      |      |      |
| Max Green (Gmax), s                 |     | 51.5 | 29.0 |      | 10.0 | 37.5 |      |      |      |      |      |      |
| Max Allow Headway (MAH), s          |     | 4.0  | 4.3  |      | 4.1  | 4.1  |      |      |      |      |      |      |
| Max Q Clear (g <sub>c</sub> +I1), s |     | 20.3 | 16.9 |      | 3.8  | 10.9 |      |      |      |      |      |      |
| Green Ext Time (g <sub>e</sub> ), s |     | 4.0  | 1.9  |      | 0.0  | 3.9  |      |      |      |      |      |      |
| Prob of Phs Call (p <sub>c</sub> )  |     | 1.00 | 1.00 |      | 0.56 | 1.00 |      |      |      |      |      |      |
| Prob of Max Out (p <sub>x</sub> )   |     | 0.00 | 0.05 |      | 0.05 | 0.00 |      |      |      |      |      |      |
| Left-Turn Movement Data             |     |      |      |      |      |      |      |      |      |      |      |      |
| Assigned Mvmt                       |     |      |      | 3    |      | 5    | 1    |      |      |      |      |      |
| Mvmt Sat Flow, veh/h                |     |      |      | 3183 |      | 1641 | 0    |      |      |      |      |      |
| Through Movement Data               |     |      |      |      |      |      |      |      |      |      |      |      |
| Assigned Mvmt                       |     | 2    | 8    |      |      | 6    |      |      |      |      |      |      |
| Mvmt Sat Flow, veh/h                |     | 3647 | 0    |      |      | 5274 |      |      |      |      |      |      |
| Right-Turn Movement Data            |     |      |      |      |      |      |      |      |      |      |      |      |
| Assigned Mvmt                       |     |      | 12   | 18   |      |      | 16   |      |      |      |      |      |
| Mvmt Sat Flow, veh/h                |     |      | 0    | 2569 |      |      | 1460 |      |      |      |      |      |
| Left Lane Group Data                |     |      |      |      |      |      |      |      |      |      |      |      |
| Assigned Mvmt                       | 0   | 0    | 3    | 0    | 5    | 1    | 0    | 0    |      |      |      |      |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

AM 2026  
07/16/2024

|                                     |      |      |      |          |      |      |      |      |
|-------------------------------------|------|------|------|----------|------|------|------|------|
| Lane Assignment                     | L    |      |      | L (Prot) |      |      |      |      |
| Lanes in Grp                        | 0    | 0    | 2    | 0        | 1    | 0    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 59   | 0        | 33   | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 1591 | 0        | 1641 | 0    | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 1.3  | 0.0      | 1.8  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 1.3  | 0.0      | 1.8  | 0.0  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 1591 | 0        | 0    | 0    | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0        | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 56.9 | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 1.00 | 0.00     | 1.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 669  | 0        | 41   | 0    | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.09 | 0.00     | 0.81 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 1029 | 0        | 182  | 0    | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 1.00 | 0.00     | 0.92 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 28.6 | 0.0      | 44.4 | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.1  | 0.0      | 27.5 | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 28.7 | 0.0      | 71.9 | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.5  | 0.0      | 0.7  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0      | 0.3  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 0.00 | 1.00 | 0.00     | 1.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.5  | 0.0      | 1.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.04 | 0.00     | 0.06 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0        | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 8    | 0    | 0    | 6    | 0    | 0    |
| Lane Assignment             | T    |      |      | T    |      |      |      |      |
| Lanes in Grp                | 0    | 2    | 0    | 0    | 0    | 3    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 866  | 0    | 0    | 0    | 570  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1777 | 0    | 0    | 0    | 1702 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 18.3 | 0.0  | 0.0  | 0.0  | 4.2  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 18.3 | 0.0  | 0.0  | 0.0  | 4.2  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 2495 | 0    | 0    | 0    | 3231 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.35 | 0.00 | 0.00 | 0.00 | 0.18 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 2495 | 0    | 0    | 0    | 3231 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.92 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 17.3 | 0.0  | 0.0  | 0.0  | 6.8  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.4  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 17.7 | 0.0  | 0.0  | 0.0  | 7.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 8.5  | 0.0  | 0.0  | 0.0  | 1.1  | 0.0  | 0.0  |

Baseline

Synchro 9 Report



# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 8.6  | 0.0  | 0.0  | 0.0  | 1.1  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.39 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 18   | 0    | 0    | 16   | 0    | 0    |
| Lane Assignment                  | R    |      |      | R    |      |      |      |      |
| Lanes in Grp                     | 0    | 0    | 2    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 0    | 446  | 0    | 0    | 311  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 0    | 1285 | 0    | 0    | 1460 | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 0.0  | 14.9 | 0.0  | 0.0  | 8.9  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 0.0  | 14.9 | 0.0  | 0.0  | 8.9  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 0    | 540  | 0    | 0    | 924  | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.00 | 0.83 | 0.00 | 0.00 | 0.34 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 0    | 831  | 0    | 0    | 924  | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 0.0  | 34.0 | 0.0  | 0.0  | 7.7  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.0  | 4.1  | 0.0  | 0.0  | 1.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 0.0  | 38.1 | 0.0  | 0.0  | 8.7  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.0  | 4.2  | 0.0  | 0.0  | 2.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.0  | 4.6  | 0.0  | 0.0  | 2.3  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.00 | 0.28 | 0.00 | 0.00 | 0.47 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 18.8 |
| HCM 7th LOS                  | B    |

# HCM 7th Signalized Intersection Capacity Analysis

## 2: 12th Ave & SR 198 WB EB Ramps

AM 2026  
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|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |  |                                                                                     |                                                                                     |  |  |
| Traffic Volume (veh/h)        | 312                                                                               | 0                                                                                 | 19                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 553                                                                                 | 130                                                                                 | 0                                                                                   | 308                                                                                 | 0                                                                                   |
| Future Volume (veh/h)         | 312                                                                               | 0                                                                                 | 19                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 553                                                                                 | 130                                                                                 | 0                                                                                   | 308                                                                                 | 0                                                                                   |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                |                                                                                   |                                                                                   |                                                                                   | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 0                                                                                 | 1723                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1870                                                                                | 1723                                                                                | 0                                                                                   | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 339                                                                               | 0                                                                                 | 21                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 601                                                                                 | 141                                                                                 | 0                                                                                   | 335                                                                                 | 0                                                                                   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 0                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Cap, veh/h                    | 448                                                                               | 0                                                                                 | 206                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2204                                                                                | 516                                                                                 | 0                                                                                   | 2741                                                                                | 1126                                                                                |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 2.00                                                                                | 2.00                                                                                | 1.00                                                                                | 2.00                                                                                | 2.00                                                                                |
| Prop Arrive On Green          | 0.14                                                                              | 0.00                                                                              | 0.14                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 39.8                                                                              | 0.0                                                                               | 33.9                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.0                                                                                 |
| Ln Grp LOS                    | D                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     | A                                                                                   | A                                                                                   |                                                                                     | A                                                                                   |                                                                                     |
| Approach Vol, veh/h           | 360                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 742                                                                                 |                                                                                     |                                                                                     | 335                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh         | 39.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.5                                                                                 |                                                                                     |                                                                                     | 0.1                                                                                 |                                                                                     |                                                                                     |
| Approach LOS                  | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Timer:                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       | 8.0                                                                               |                                                                                   | 9.0                                                                               |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 73.4                                                                              |                                                                                   | 16.6                                                                              |                                                                                   | 73.4                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | 5.5                                                                               |                                                                                   | 4.0                                                                               |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           | 50.5                                                                              |                                                                                   | 30.0                                                                              |                                                                                   | 50.5                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    | 4.1                                                                               |                                                                                   | 4.1                                                                               |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       | 2.0                                                                               |                                                                                   | 11.2                                                                              |                                                                                   | 2.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       | 2.9                                                                               |                                                                                   | 1.4                                                                               |                                                                                   | 1.4                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         | 0.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 5                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 1                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 0                                                                                 |                                                                                   | 3183                                                                              |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 2951                                                                              |                                                                                   | 0                                                                                 |                                                                                   | 3647                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 12                                                                                |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 669                                                                               |                                                                                   | 1460                                                                              |                                                                                   | 1460                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 2: 12th Ave & SR 198 WB EB Ramps

AM 2026  
07/16/2024

|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     | L    |      |      |      |      |      |      |      |
| Lanes in Grp                        | 0    | 0    | 0    | 2    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 0    | 339  | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 0    | 1591 | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.0  | 9.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.0  | 9.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 0    | 1591 | 0    | 0    | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 69.4 | 0.0  | 0.0  | 0.0  | 69.4 | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 0    | 448  | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.00 | 0.76 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 0    | 1065 | 0    | 0    | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 0.0  | 37.2 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.0  | 2.6  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 0.0  | 39.8 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.0  | 3.3  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.0  | 3.5  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.00 | 0.17 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 0    |
| Lane Assignment             | T    |      |      |      | T    |      |      |      |
| Lanes in Grp                | 0    | 1    | 0    | 0    | 0    | 2    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 373  | 0    | 0    | 0    | 335  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1777 | 0    | 0    | 0    | 1777 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 1371 | 0    | 0    | 0    | 2741 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.27 | 0.00 | 0.00 | 0.00 | 0.12 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 1371 | 0    | 0    | 0    | 2741 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.93 | 0.00 | 0.00 | 0.00 | 0.99 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.5  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.5  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

## HCM 7th Signalized Intersection Capacity Analysis

### 2: 12th Ave & SR 198 WB EB Ramps

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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

#### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      | R    |      |      |      |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 369  | 0    | 21   | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1750 | 0    | 1460 | 0    | 1460 | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 0.0  | 0.0  | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 0.0  | 0.0  | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.38 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1350 | 0    | 206  | 0    | 1126 | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.27 | 0.00 | 0.10 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1350 | 0    | 488  | 0    | 1126 | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 0.93 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 0.0  | 0.0  | 33.7 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.5  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 0.5  | 0.0  | 33.9 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.0  | 0.0  | 0.4  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.2  | 0.0  | 0.4  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

#### Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 10.1 |
| HCM 7th LOS                  | B    |

| Intersection                  |         |        |         |        |         |         |        |
|-------------------------------|---------|--------|---------|--------|---------|---------|--------|
| Intersection Delay, s/veh 5.0 |         |        |         |        |         |         |        |
| Intersection LOS A            |         |        |         |        |         |         |        |
| Approach                      | EB      |        | WB      |        | NB      |         | SB     |
| Entry Lanes                   | 1       |        | 1       |        | 1       |         | 1      |
| Conflicting Circle Lanes      | 1       |        | 1       |        | 1       |         | 1      |
| Adj Approach Flow, veh/h      | 425     |        | 428     |        | 0       |         | 219    |
| Demand Flow Rate, veh/h       | 433     |        | 436     |        | 0       |         | 224    |
| Vehicles Circulating, veh/h   | 367     |        | 124     |        | 325     |         | 367    |
| Vehicles Exiting, veh/h       | 221     |        | 201     |        | 325     |         | 124    |
| Ped Vol Crossing Leg, #/h     | 0       |        | 0       |        | 0       |         | 0      |
| Ped Cap Adj                   | 1.000   |        | 1.000   |        | 1.000   |         | 1.000  |
| Approach Delay, s/veh         | 4.5     |        | 4.9     |        | 0.0     |         | 6.2    |
| Approach LOS                  | A       |        | A       |        | -       |         | A      |
| Lane                          | Left    | Bypass | Left    | Bypass | Left    | Left    | Bypass |
| Designated Moves              | LT      | R      | LT      | R      | LTR     | LT      | R      |
| Assumed Moves                 | LT      |        | LT      |        | LTR     | LT      |        |
| RT Channelized                |         | Free   |         | Free   |         |         | Free   |
| Lane Util                     | 1.000   |        | 1.000   |        | 1.000   | 1.000   |        |
| Follow-Up Headway, s          | 2.609   |        | 2.609   |        | 2.609   | 2.609   |        |
| Critical Headway, s           | 4.976   |        | 4.976   |        | 4.976   | 4.976   |        |
| A (Intercept)                 | 1380    |        | 1380    |        | 1380    | 1380    |        |
| B (Slope)                     | 1.02e-3 |        | 1.02e-3 |        | 1.02e-3 | 1.02e-3 |        |
| Entry Flow, veh/h             | 282     | 151    | 367     | 69     | 0       | 222     | 2      |
| Cap Entry Lane, veh/h         | 949     | 1938   | 1216    | 1938   | 991     | 949     | 1938   |
| Entry HV Adj Factor           | 0.982   | 0.980  | 0.980   | 0.980  | 1.000   | 0.980   | 0.980  |
| Flow Entry, veh/h             | 277     | 148    | 360     | 68     | 0       | 217     | 2      |
| Cap Entry, veh/h              | 932     | 1900   | 1192    | 1900   | 991     | 930     | 1900   |
| V/C Ratio                     | 0.297   | 0.078  | 0.302   | 0.036  | 0.000   | 0.234   | 0.001  |
| Control Delay, s/veh          | 7.0     | 0.0    | 5.8     | 0.0    | 3.6     | 6.2     | 0.0    |
| LOS                           | A       | A      | A       | A      | A       | A       | A      |
| 95th %tile Queue, veh         | 1       | 0      | 1       | 0      | 0       | 1       | 0      |

# HCM 7th Signalized Intersection Capacity Analysis

## 4: SR 198 EB Ramps & Hanford Armona Rd

AM 2026  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)        | 84                                                                                | 2                                                                                 | 85                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 321                                                                                 | 27                                                                                  | 126                                                                                 | 146                                                                                 | 0                                                                                   |
| Future Volume (veh/h)         | 84                                                                                | 2                                                                                 | 85                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 321                                                                                 | 27                                                                                  | 126                                                                                 | 146                                                                                 | 0                                                                                   |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                |                                                                                   |                                                                                   |                                                                                   | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 0                                                                                   |
| Adj Flow Rate, veh/h          | 91                                                                                | 2                                                                                 | 92                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 349                                                                                 | 29                                                                                  | 137                                                                                 | 159                                                                                 | 0                                                                                   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Cap, veh/h                    | 147                                                                               | 0                                                                                 | 131                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1399                                                                                | 116                                                                                 | 538                                                                                 | 605                                                                                 | 0                                                                                   |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Prop Arrive On Green          | 0.09                                                                              | 0.09                                                                              | 0.09                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 0.82                                                                                | 0.80                                                                                | 0.82                                                                                | 0.82                                                                                | 0.00                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 43.7                                                                              | 0.0                                                                               | 46.5                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 2.2                                                                                 | 2.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Ln Grp LOS                    | D                                                                                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     | A                                                                                   | A                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h           | 183                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 378                                                                                 |                                                                                     |                                                                                     | 296                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh         | 45.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 2.2                                                                                 |                                                                                     |                                                                                     | 2.4                                                                                 |                                                                                     |                                                                                     |
| Approach LOS                  | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Timer:                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                               | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       | 8.0                                                                               |                                                                                   | 9.0                                                                               |                                                                                   | 8.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 77.9                                                                              |                                                                                   | 12.1                                                                              |                                                                                   | 77.9                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | 5.5                                                                               |                                                                                   | 4.1                                                                               |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           | 56.5                                                                              |                                                                                   | 23.9                                                                              |                                                                                   | 56.5                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    | 4.0                                                                               |                                                                                   | 4.2                                                                               |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       | 6.2                                                                               |                                                                                   | 7.5                                                                               |                                                                                   | 7.7                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       | 1.4                                                                               |                                                                                   | 0.5                                                                               |                                                                                   | 1.3                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        | 1.00                                                                              |                                                                                   | 0.99                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         | 0.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 5                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 1                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 0                                                                                 |                                                                                   | 1641                                                                              |                                                                                   | 584                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 1703                                                                              |                                                                                   | 0                                                                                 |                                                                                   | 737                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 12                                                                                |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 142                                                                               |                                                                                   | 1460                                                                              |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 4: SR 198 EB Ramps & Hanford Armona Rd

AM 2026  
07/16/2024

| Lane Assignment                     |      |      |      | L    |      | L+T  |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lanes in Grp                        | 0    | 0    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 0    | 91   | 0    | 296  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 0    | 1641 | 0    | 1321 | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.0  | 4.8  | 0.0  | 1.6  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.0  | 4.8  | 0.0  | 5.7  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 0    | 1641 | 0    | 1021 | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 73.9 | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 69.8 | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 1.6  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 73.9 | 0.0  | 0.0  | 0.0  | 2.3  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 2.3  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.46 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 0    | 147  | 0    | 1143 | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.00 | 0.62 | 0.00 | 0.26 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 0    | 438  | 0    | 1143 | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 0.0  | 39.5 | 0.0  | 1.8  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.0  | 4.2  | 0.0  | 0.5  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 0.0  | 43.7 | 0.0  | 2.4  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.0  | 1.8  | 0.0  | 0.2  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.2  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.0  | 2.0  | 0.0  | 0.3  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.00 | 0.14 | 0.00 | 0.07 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 0    |
| Lane Assignment             |      |      |      |      |      |      |      |      |
| Lanes in Grp                | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 4: SR 198 EB Ramps & Hanford Armona Rd

AM 2026  
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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      |      |      |      |      |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 378  | 0    | 92   | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1845 | 0    | 1460 | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 4.2  | 0.0  | 5.5  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 4.2  | 0.0  | 5.5  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.08 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1516 | 0    | 131  | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.25 | 0.00 | 0.70 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1516 | 0    | 389  | 0    | 0    | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 1.8  | 0.0  | 39.8 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.4  | 0.0  | 6.7  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 2.2  | 0.0  | 46.5 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.2  | 0.0  | 1.8  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.2  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.4  | 0.0  | 2.1  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.04 | 0.00 | 0.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 11.4 |
| HCM 7th LOS                  | B    |



| Intersection              |        |      |      |        |       |      |        |       |       |        |       |       |
|---------------------------|--------|------|------|--------|-------|------|--------|-------|-------|--------|-------|-------|
| Int Delay, s/veh          | 1.5    |      |      |        |       |      |        |       |       |        |       |       |
| Movement                  | EBL    | EBT  | EBR  | WBL    | WBT   | WBR  | NBL    | NBT   | NBR   | SBL    | SBT   | SBR   |
| Lane Configurations       |        | ↕    |      |        | ↕     |      |        | ↕     |       |        | ↕     |       |
| Traffic Vol, veh/h        | 0      | 205  | 36   | 22     | 316   | 0    | 40     | 0     | 14    | 0      | 0     | 0     |
| Future Vol, veh/h         | 0      | 205  | 36   | 22     | 316   | 0    | 40     | 0     | 14    | 0      | 0     | 0     |
| Conflicting Peds, #/hr    | 0      | 0    | 0    | 0      | 0     | 0    | 0      | 0     | 0     | 0      | 0     | 0     |
| Sign Control              | Free   | Free | Free | Free   | Free  | Free | Stop   | Stop  | Stop  | Stop   | Stop  | Stop  |
| RT Channelized            | -      | -    | None | -      | -     | None | -      | -     | None  | -      | -     | None  |
| Storage Length            | -      | -    | -    | -      | -     | -    | -      | -     | -     | -      | -     | -     |
| Veh in Median Storage, #  | -      | 0    | -    | -      | 0     | -    | -      | 0     | -     | -      | 0     | -     |
| Grade, %                  | -      | 0    | -    | -      | 0     | -    | -      | 0     | -     | -      | 0     | -     |
| Peak Hour Factor          | 92     | 92   | 92   | 92     | 92    | 92   | 92     | 92    | 92    | 92     | 92    | 92    |
| Heavy Vehicles, %         | 2      | 2    | 2    | 2      | 2     | 2    | 2      | 2     | 2     | 2      | 2     | 2     |
| Mvmt Flow                 | 0      | 223  | 39   | 24     | 343   | 0    | 43     | 0     | 15    | 0      | 0     | 0     |
| Major/Minor               | Major1 |      |      | Major2 |       |      | Minor1 |       |       | Minor2 |       |       |
| Conflicting Flow All      | 343    | 0    | 0    | 262    | 0     | 0    | 634    | 634   | 242   | 614    | 653   | 343   |
| Stage 1                   | -      | -    | -    | -      | -     | -    | 242    | 242   | -     | 391    | 391   | -     |
| Stage 2                   | -      | -    | -    | -      | -     | -    | 391    | 391   | -     | 223    | 262   | -     |
| Critical Hdwy             | 4.12   | -    | -    | 4.12   | -     | -    | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1       | -      | -    | -    | -      | -     | -    | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2       | -      | -    | -    | -      | -     | -    | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy            | 2.218  | -    | -    | 2.218  | -     | -    | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver        | 1216   | -    | -    | 1302   | -     | -    | 392    | 397   | 796   | 404    | 387   | 699   |
| Stage 1                   | -      | -    | -    | -      | -     | -    | 761    | 705   | -     | 633    | 607   | -     |
| Stage 2                   | -      | -    | -    | -      | -     | -    | 633    | 607   | -     | 780    | 692   | -     |
| Platoon blocked, %        | -      | -    | -    | -      | -     | -    | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver        | 1216   | -    | -    | 1302   | -     | -    | 383    | 388   | 796   | 387    | 378   | 699   |
| Mov Cap-2 Maneuver        | -      | -    | -    | -      | -     | -    | 383    | 388   | -     | 387    | 378   | -     |
| Stage 1                   | -      | -    | -    | -      | -     | -    | 761    | 705   | -     | 619    | 593   | -     |
| Stage 2                   | -      | -    | -    | -      | -     | -    | 619    | 593   | -     | 765    | 692   | -     |
| Approach                  | EB     |      |      | WB     |       |      | NB     |       |       | SB     |       |       |
| HCM Control Delay, s/v    | 0      |      |      | 0.51   |       |      | 14.37  |       |       | 0      |       |       |
| HCM LOS                   |        |      |      |        |       |      | B      |       |       | A      |       |       |
| Minor Lane/Major Mvmt     | NBLn1  | EBL  | EBT  | EBR    | WBL   | WBT  | WBR    | SBLn1 |       |        |       |       |
| Capacity (veh/h)          | 443    | 1216 | -    | -      | 117   | -    | -      | -     |       |        |       |       |
| HCM Lane V/C Ratio        | 0.133  | -    | -    | -      | 0.018 | -    | -      | -     |       |        |       |       |
| HCM Control Delay (s/veh) | 14.4   | 0    | -    | -      | 7.8   | 0    | -      | 0     |       |        |       |       |
| HCM Lane LOS              | B      | A    | -    | -      | A     | A    | -      | A     |       |        |       |       |
| HCM 95th %tile Q(veh)     | 0.5    | 0    | -    | -      | 0.1   | -    | -      | -     |       |        |       |       |

# HCM 7th Signalized Intersection Capacity Analysis

## 6: 12th Ave & Hanford Armona Rd

AM 2026  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |  |  |  |  |  |   |  |  |  |  |  |
| Traffic Volume (veh/h)        | 132                                                                               | 197                                                                               | 49                                                                                | 29                                                                                | 189                                                                               | 208                                                                               | 82                                                                                  | 345                                                                                 | 33                                                                                  | 101                                                                                 | 183                                                                                 | 54                                                                                  |
| Future Volume (veh/h)         | 132                                                                               | 197                                                                               | 49                                                                                | 29                                                                                | 189                                                                               | 208                                                                               | 82                                                                                  | 345                                                                                 | 33                                                                                  | 101                                                                                 | 183                                                                                 | 54                                                                                  |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                                | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 143                                                                               | 214                                                                               | 53                                                                                | 32                                                                                | 205                                                                               | 226                                                                               | 89                                                                                  | 375                                                                                 | 36                                                                                  | 110                                                                                 | 199                                                                                 | 59                                                                                  |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Cap, veh/h                    | 199                                                                               | 294                                                                               | 229                                                                               | 265                                                                               | 369                                                                               | 288                                                                               | 135                                                                                 | 1797                                                                                | 172                                                                                 | 459                                                                                 | 1147                                                                                | 331                                                                                 |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                                | 2.00                                                                                | 2.00                                                                                | 2.00                                                                                | 2.00                                                                                | 2.00                                                                                |
| Prop Arrive On Green          | 0.12                                                                              | 0.16                                                                              | 0.16                                                                              | 0.16                                                                              | 0.20                                                                              | 0.20                                                                              | 0.16                                                                                | 1.00                                                                                | 1.00                                                                                | 0.84                                                                                | 0.84                                                                                | 0.81                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 43.6                                                                              | 39.6                                                                              | 19.6                                                                              | 32.5                                                                              | 33.9                                                                              | 41.2                                                                              | 41.1                                                                                | 0.4                                                                                 | 0.4                                                                                 | 5.5                                                                                 | 4.7                                                                                 | 5.1                                                                                 |
| Ln Grp LOS                    | D                                                                                 | D                                                                                 | B                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | D                                                                                   | A                                                                                   | A                                                                                   | A                                                                                   | A                                                                                   | A                                                                                   |
| Approach Vol, veh/h           | 410                                                                               |                                                                                   |                                                                                   | 463                                                                               |                                                                                   |                                                                                   | 500                                                                                 |                                                                                     |                                                                                     | 368                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh         | 38.4                                                                              |                                                                                   |                                                                                   | 37.4                                                                              |                                                                                   |                                                                                   | 7.7                                                                                 |                                                                                     |                                                                                     | 5.1                                                                                 |                                                                                     |                                                                                     |
| Approach LOS                  | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Timer:                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 2                                                                                 |                                                                                   | 4                                                                                 | 3                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       | 4.0                                                                               |                                                                                   | 3.0                                                                               | 2.0                                                                               | 2.0                                                                               | 6.3                                                                               | 2.0                                                                                 | 3.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 53.3                                                                              |                                                                                   | 18.1                                                                              | 18.5                                                                              | 11.4                                                                              | 41.9                                                                              | 14.9                                                                                | 21.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | 5.5                                                                               |                                                                                   | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                                 | 5.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           | 37.1                                                                              |                                                                                   | 31.6                                                                              | 4.8                                                                               | 8.5                                                                               | 23.1                                                                              | 13.5                                                                                | 22.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    | 4.0                                                                               |                                                                                   | 4.1                                                                               | 4.1                                                                               | 4.1                                                                               | 4.5                                                                               | 4.1                                                                                 | 4.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       | 2.0                                                                               |                                                                                   | 11.8                                                                              | 3.5                                                                               | 6.6                                                                               | 4.3                                                                               | 9.6                                                                                 | 15.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       | 1.4                                                                               |                                                                                   | 0.8                                                                               | 0.0                                                                               | 0.0                                                                               | 1.4                                                                               | 0.1                                                                                 | 1.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        | 1.00                                                                              |                                                                                   | 1.00                                                                              | 0.55                                                                              | 0.89                                                                              | 1.00                                                                              | 0.97                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         | 0.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                                | 0.22                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   |                                                                                   |                                                                                   | 3                                                                                 | 5                                                                                 | 1                                                                                 | 7                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   |                                                                                   | 1641                                                                              | 1641                                                                              | 898                                                                               | 1641                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 3278                                                                              |                                                                                   | 1870                                                                              |                                                                                   |                                                                                   |                                                                                   | 2721                                                                                | 1870                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 12                                                                                |                                                                                   | 14                                                                                |                                                                                   |                                                                                   |                                                                                   | 16                                                                                  | 18                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 313                                                                               |                                                                                   | 1460                                                                              |                                                                                   |                                                                                   |                                                                                   | 785                                                                                 | 1460                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 3                                                                                 | 5                                                                                 | 1                                                                                 | 7                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 6: 12th Ave & Hanford Armona Rd

AM 2026  
07/16/2024

| Lane Assignment                     |      |      |      | L (Prot) | L (Prot) | L    | L (Prot) |      |
|-------------------------------------|------|------|------|----------|----------|------|----------|------|
| Lanes in Grp                        | 0    | 0    | 0    | 1        | 1        | 1    | 1        | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 0    | 32       | 89       | 110  | 143      | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 0    | 1641     | 1641     | 898  | 1641     | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.0  | 1.5      | 4.6      | 2.3  | 7.6      | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.0  | 1.5      | 4.6      | 2.3  | 7.6      | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 0    | 0        | 0        | 898  | 0        | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0        | 0        | 0    | 0        | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 37.9 | 0.0      | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 37.9 | 0.0      | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 2.3  | 0.0      | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0  | 0.0      | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0  | 0.0      | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 0.00 | 1.00     | 1.00     | 1.00 | 1.00     | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 0    | 265      | 135      | 459  | 199      | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.00 | 0.12     | 0.66     | 0.24 | 0.72     | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 0    | 265      | 182      | 459  | 273      | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 0.00 | 0.99     | 0.86     | 1.00 | 1.00     | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 0.0  | 32.3     | 36.4     | 4.3  | 38.1     | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.0  | 0.2      | 4.7      | 1.2  | 5.6      | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0  | 0.0      | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 0.0  | 32.5     | 41.1     | 5.5  | 43.6     | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.0  | 0.6      | 1.6      | 0.3  | 2.8      | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0      | 0.2      | 0.2  | 0.3      | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0  | 0.0      | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 0.00 | 0.00 | 1.00     | 1.00     | 1.00 | 1.00     | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.0  | 0.6      | 1.8      | 0.5  | 3.1      | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.00 | 0.29     | 0.23     | 0.06 | 0.53     | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0  | 0.0      | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0  | 0.0      | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0  | 0.0      | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0  | 0.0      | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0        | 0        | 0    | 0        | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0      | 0.0      | 0.0  | 0.0      | 0.0  |

## Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 4    | 0    | 0    | 6    | 0    | 8    |
| Lane Assignment             |      | T    | T    |      |      | T    |      | T    |
| Lanes in Grp                | 0    | 1    | 1    | 0    | 0    | 1    | 0    | 1    |
| Grp Vol (v), veh/h          | 0    | 202  | 214  | 0    | 0    | 128  | 0    | 205  |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1777 | 1870 | 0    | 0    | 1777 | 0    | 1870 |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 9.8  | 0.0  | 0.0  | 1.2  | 0.0  | 8.9  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 9.8  | 0.0  | 0.0  | 1.2  | 0.0  | 8.9  |
| Lane Grp Cap (c), veh/h     | 0    | 974  | 294  | 0    | 0    | 749  | 0    | 369  |
| V/C Ratio (X)               | 0.00 | 0.21 | 0.73 | 0.00 | 0.00 | 0.17 | 0.00 | 0.56 |
| Avail Cap (c_a), veh/h      | 0    | 974  | 688  | 0    | 0    | 749  | 0    | 507  |
| Upstream Filter (I)         | 0.00 | 0.86 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.99 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 36.1 | 0.0  | 0.0  | 4.2  | 0.0  | 32.6 |
| Incr Delay (d2), s/veh      | 0.0  | 0.4  | 3.5  | 0.0  | 0.0  | 0.5  | 0.0  | 1.3  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.4  | 39.6 | 0.0  | 0.0  | 4.7  | 0.0  | 33.9 |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 4.1  | 0.0  | 0.0  | 0.4  | 0.0  | 3.7  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 6: 12th Ave & Hanford Armona Rd

AM 2026  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.1  | 0.3  | 0.0  | 0.0  | 0.1  | 0.0  | 0.1  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.1  | 4.4  | 0.0  | 0.0  | 0.5  | 0.0  | 3.8  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.01 | 0.00 | 0.02 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 14   | 0    | 0    | 16   | 0    | 18   |
| Lane Assignment                  | T+R  |      | R    |      |      | T+R  | R    |      |
| Lanes in Grp                     | 0    | 1    | 1    | 0    | 0    | 1    | 0    | 1    |
| Grp Vol (v), veh/h               | 0    | 209  | 53   | 0    | 0    | 130  | 0    | 226  |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1814 | 1460 | 0    | 0    | 1729 | 0    | 1460 |
| Q Serve Time (g_s), s            | 0.0  | 0.0  | 2.2  | 0.0  | 0.0  | 1.4  | 0.0  | 13.2 |
| Cycle Q Clear Time (g_c), s      | 0.0  | 0.0  | 2.2  | 0.0  | 0.0  | 1.4  | 0.0  | 13.2 |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.17 | 1.00 | 0.00 | 0.00 | 0.45 | 0.00 | 1.00 |
| Lane Grp Cap (c), veh/h          | 0    | 994  | 229  | 0    | 0    | 729  | 0    | 288  |
| V/C Ratio (X)                    | 0.00 | 0.21 | 0.23 | 0.00 | 0.00 | 0.18 | 0.00 | 0.79 |
| Avail Cap (c_a), veh/h           | 0    | 994  | 537  | 0    | 0    | 729  | 0    | 396  |
| Upstream Filter (I)              | 0.00 | 0.86 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.99 |
| Uniform Delay (d1), s/veh        | 0.0  | 0.0  | 19.0 | 0.0  | 0.0  | 4.6  | 0.0  | 34.3 |
| Incr Delay (d2), s/veh           | 0.0  | 0.4  | 0.5  | 0.0  | 0.0  | 0.5  | 0.0  | 6.9  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 0.4  | 19.6 | 0.0  | 0.0  | 5.1  | 0.0  | 41.2 |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.0  | 0.9  | 0.0  | 0.0  | 0.4  | 0.0  | 4.3  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.1  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.6  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.1  | 1.0  | 0.0  | 0.0  | 0.5  | 0.0  | 4.8  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.00 | 0.24 | 0.00 | 0.00 | 0.01 | 0.00 | 2.46 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 22.3 |
| HCM 7th LOS                  | C    |

# HCM 7th Signalized Intersection Capacity Analysis

## 7: 11th Ave & Hanford Armona Rd

AM 2026  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |  |  |  |  |                                                                                   |   |  |  |  |  |  |
| Traffic Volume (veh/h)        | 187                                                                               | 204                                                                               | 63                                                                                | 83                                                                                | 125                                                                               | 71                                                                                | 37                                                                                  | 297                                                                                 | 90                                                                                  | 50                                                                                  | 226                                                                                 | 93                                                                                  |
| Future Volume (veh/h)         | 187                                                                               | 204                                                                               | 63                                                                                | 83                                                                                | 125                                                                               | 71                                                                                | 37                                                                                  | 297                                                                                 | 90                                                                                  | 50                                                                                  | 226                                                                                 | 93                                                                                  |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                                | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 203                                                                               | 222                                                                               | 68                                                                                | 90                                                                                | 136                                                                               | 77                                                                                | 40                                                                                  | 323                                                                                 | 98                                                                                  | 54                                                                                  | 246                                                                                 | 101                                                                                 |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Cap, veh/h                    | 723                                                                               | 1210                                                                              | 944                                                                               | 681                                                                               | 725                                                                               | 411                                                                               | 226                                                                                 | 494                                                                                 | 386                                                                                 | 178                                                                                 | 494                                                                                 | 386                                                                                 |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Prop Arrive On Green          | 0.65                                                                              | 0.65                                                                              | 0.65                                                                              | 0.65                                                                              | 0.65                                                                              | 0.63                                                                              | 0.26                                                                                | 0.26                                                                                | 0.26                                                                                | 0.26                                                                                | 0.26                                                                                | 0.26                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 9.9                                                                               | 6.7                                                                               | 6.0                                                                               | 8.3                                                                               | 0.0                                                                               | 6.9                                                                               | 34.1                                                                                | 30.9                                                                                | 26.5                                                                                | 38.8                                                                                | 28.8                                                                                | 26.5                                                                                |
| Ln Grp LOS                    | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   | A                                                                                 | C                                                                                   | C                                                                                   | C                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h           | 493                                                                               |                                                                                   |                                                                                   | 303                                                                               |                                                                                   |                                                                                   | 461                                                                                 |                                                                                     |                                                                                     | 401                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh         | 7.9                                                                               |                                                                                   |                                                                                   | 7.3                                                                               |                                                                                   |                                                                                   | 30.2                                                                                |                                                                                     |                                                                                     | 29.6                                                                                |                                                                                     |                                                                                     |
| Approach LOS                  | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer:                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |
| Case No                       | 5.0                                                                               |                                                                                   |                                                                                   | 5.0                                                                               |                                                                                   |                                                                                   | 5.0                                                                                 |                                                                                     |                                                                                     | 6.0                                                                                 |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 27.8                                                                              |                                                                                   |                                                                                   | 62.2                                                                              |                                                                                   |                                                                                   | 27.8                                                                                |                                                                                     |                                                                                     | 62.2                                                                                |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | 5.5                                                                               |                                                                                   |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                   | 5.5                                                                                 |                                                                                     |                                                                                     | 5.5                                                                                 |                                                                                     |                                                                                     |
| Max Green (Gmax), s           | 34.5                                                                              |                                                                                   |                                                                                   | 44.5                                                                              |                                                                                   |                                                                                   | 34.5                                                                                |                                                                                     |                                                                                     | 44.5                                                                                |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    | 4.2                                                                               |                                                                                   |                                                                                   | 4.4                                                                               |                                                                                   |                                                                                   | 4.3                                                                                 |                                                                                     |                                                                                     | 4.4                                                                                 |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       | 15.8                                                                              |                                                                                   |                                                                                   | 14.9                                                                              |                                                                                   |                                                                                   | 21.0                                                                                |                                                                                     |                                                                                     | 9.8                                                                                 |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       | 1.6                                                                               |                                                                                   |                                                                                   | 2.1                                                                               |                                                                                   |                                                                                   | 1.3                                                                                 |                                                                                     |                                                                                     | 1.3                                                                                 |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         | 0.00                                                                              |                                                                                   |                                                                                   | 0.00                                                                              |                                                                                   |                                                                                   | 0.02                                                                                |                                                                                     |                                                                                     | 0.00                                                                                |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 5                                                                                 |                                                                                   |                                                                                   | 7                                                                                 |                                                                                   |                                                                                   | 1                                                                                   |                                                                                     |                                                                                     | 3                                                                                   |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 952                                                                               |                                                                                   |                                                                                   | 1076                                                                              |                                                                                   |                                                                                   | 890                                                                                 |                                                                                     |                                                                                     | 1003                                                                                |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 1870                                                                              |                                                                                   |                                                                                   | 1870                                                                              |                                                                                   |                                                                                   | 1870                                                                                |                                                                                     |                                                                                     | 1121                                                                                |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 12                                                                                |                                                                                   |                                                                                   | 14                                                                                |                                                                                   |                                                                                   | 16                                                                                  |                                                                                     |                                                                                     | 18                                                                                  |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 1460                                                                              |                                                                                   |                                                                                   | 1460                                                                              |                                                                                   |                                                                                   | 1460                                                                                |                                                                                     |                                                                                     | 635                                                                                 |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 3                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 7: 11th Ave & Hanford Armona Rd

AM 2026  
07/16/2024

|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     |      | L    |      | L    |      | L    |      | L    |
| Lanes in Grp                        | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 1    |
| Grp Vol (v), veh/h                  | 0    | 40   | 0    | 203  | 0    | 54   | 0    | 90   |
| Grp Sat Flow (s), veh/h/ln          | 0    | 952  | 0    | 1076 | 0    | 890  | 0    | 1003 |
| Q Serve Time (g_s), s               | 0.0  | 3.3  | 0.0  | 8.4  | 0.0  | 5.2  | 0.0  | 3.6  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 13.4 | 0.0  | 12.9 | 0.0  | 19.0 | 0.0  | 7.8  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 952  | 0    | 1076 | 0    | 890  | 0    | 1003 |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 23.8 | 0.0  | 58.2 | 0.0  | 23.8 | 0.0  | 58.2 |
| Perm LT Serve Time (g_u), s         | 0.0  | 13.8 | 0.0  | 53.8 | 0.0  | 10.0 | 0.0  | 53.9 |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 3.3  | 0.0  | 8.4  | 0.0  | 5.2  | 0.0  | 3.6  |
| Time to First Blk (g_f), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Lane Grp Cap (c), veh/h             | 0    | 226  | 0    | 723  | 0    | 178  | 0    | 681  |
| V/C Ratio (X)                       | 0.00 | 0.18 | 0.00 | 0.28 | 0.00 | 0.30 | 0.00 | 0.13 |
| Avail Cap (c_a), veh/h              | 0    | 355  | 0    | 723  | 0    | 299  | 0    | 681  |
| Upstream Filter (I)                 | 0.00 | 1.00 | 0.00 | 0.94 | 0.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 33.7 | 0.0  | 9.0  | 0.0  | 37.9 | 0.0  | 7.9  |
| Incr Delay (d2), s/veh              | 0.0  | 0.4  | 0.0  | 0.9  | 0.0  | 0.9  | 0.0  | 0.4  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 34.1 | 0.0  | 9.9  | 0.0  | 38.8 | 0.0  | 8.3  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.7  | 0.0  | 1.5  | 0.0  | 1.0  | 0.0  | 0.6  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.1  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.7  | 0.0  | 1.7  | 0.0  | 1.1  | 0.0  | 0.7  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.17 | 0.00 | 0.43 | 0.00 | 0.40 | 0.00 | 0.17 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 8    |
| Lane Assignment             |      | T    |      | T    |      | T    |      |      |
| Lanes in Grp                | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 323  | 0    | 222  | 0    | 246  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1870 | 0    | 1870 | 0    | 1870 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 13.8 | 0.0  | 4.3  | 0.0  | 10.0 | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 13.8 | 0.0  | 4.3  | 0.0  | 10.0 | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 494  | 0    | 1210 | 0    | 494  | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.65 | 0.00 | 0.18 | 0.00 | 0.50 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 748  | 0    | 1210 | 0    | 748  | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 1.00 | 0.00 | 0.94 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 29.4 | 0.0  | 6.4  | 0.0  | 28.0 | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 1.5  | 0.0  | 0.3  | 0.0  | 0.8  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 30.9 | 0.0  | 6.7  | 0.0  | 28.8 | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 5.6  | 0.0  | 1.2  | 0.0  | 4.1  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 7: 11th Ave & Hanford Armona Rd

AM 2026  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.2  | 0.0  | 0.1  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 5.8  | 0.0  | 1.3  | 0.0  | 4.2  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.08 | 0.00 | 0.01 | 0.00 | 0.04 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 18   |
| Lane Assignment                  |      | R    |      | R    |      | R    |      | T+R  |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 1    |
| Grp Vol (v), veh/h               | 0    | 98   | 0    | 68   | 0    | 101  | 0    | 213  |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1460 | 0    | 1460 | 0    | 1460 | 0    | 1756 |
| Q Serve Time (g_s), s            | 0.0  | 4.8  | 0.0  | 1.6  | 0.0  | 4.9  | 0.0  | 4.5  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 4.8  | 0.0  | 1.6  | 0.0  | 4.9  | 0.0  | 4.5  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.36 |
| Lane Grp Cap (c), veh/h          | 0    | 386  | 0    | 944  | 0    | 386  | 0    | 1136 |
| V/C Ratio (X)                    | 0.00 | 0.25 | 0.00 | 0.07 | 0.00 | 0.26 | 0.00 | 0.19 |
| Avail Cap (c_a), veh/h           | 0    | 584  | 0    | 944  | 0    | 584  | 0    | 1136 |
| Upstream Filter (I)              | 0.00 | 1.00 | 0.00 | 0.94 | 0.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 26.1 | 0.0  | 5.9  | 0.0  | 26.2 | 0.0  | 6.5  |
| Incr Delay (d2), s/veh           | 0.0  | 0.3  | 0.0  | 0.1  | 0.0  | 0.4  | 0.0  | 0.4  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 26.5 | 0.0  | 6.0  | 0.0  | 26.5 | 0.0  | 6.9  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 1.5  | 0.0  | 0.3  | 0.0  | 1.6  | 0.0  | 1.2  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 1.6  | 0.0  | 0.4  | 0.0  | 1.6  | 0.0  | 1.3  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.39 | 0.00 | 0.19 | 0.00 | 0.20 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 19.3 |
| HCM 7th LOS                  | B    |

# HCM 7th Signalized Intersection Capacity Analysis

## 8: 12th Ave & Hume Ave

AM 2026  
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|                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|---|---|--|
|                               |  |  |  |  |  |  |      |   |   |  |
| Movement                      | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |      |   |   |  |
| Lane Configurations           |  |  |  |                                                                                   |  |  |      |   |   |  |
| Traffic Volume (veh/h)        | 19                                                                                | 232                                                                               | 105                                                                               | 6                                                                                 | 97                                                                                | 127                                                                               |      |   |   |  |
| Future Volume (veh/h)         | 19                                                                                | 232                                                                               | 105                                                                               | 6                                                                                 | 97                                                                                | 127                                                                               |      |   |   |  |
| Number                        | 3                                                                                 | 18                                                                                | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 |      |   |   |  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |      |   |   |  |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |  |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |      |   |   |  |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |  |
| Work Zone On Approach         | No                                                                                |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |      |   |   |  |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |  |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              |      |   |   |  |
| Adj Flow Rate, veh/h          | 21                                                                                | 252                                                                               | 114                                                                               | 7                                                                                 | 105                                                                               | 138                                                                               |      |   |   |  |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |      |   |   |  |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |      |   |   |  |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |      |   |   |  |
| Cap, veh/h                    | 329                                                                               | 293                                                                               | 1239                                                                              | 76                                                                                | 888                                                                               | 1329                                                                              |      |   |   |  |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                              | 2.00                                                                              |      |   |   |  |
| Prop Arrive On Green          | 0.20                                                                              | 0.20                                                                              | 0.71                                                                              | 0.71                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |  |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |  |
| Ln Grp Delay, s/veh           | 29.2                                                                              | 42.1                                                                              | 0.0                                                                               | 4.2                                                                               | 0.3                                                                               | 0.2                                                                               |      |   |   |  |
| Ln Grp LOS                    | C                                                                                 | D                                                                                 |                                                                                   | A                                                                                 | A                                                                                 | A                                                                                 |      |   |   |  |
| Approach Vol, veh/h           | 273                                                                               |                                                                                   | 121                                                                               |                                                                                   |                                                                                   | 243                                                                               |      |   |   |  |
| Approach Delay, s/veh         | 41.1                                                                              |                                                                                   | 4.2                                                                               |                                                                                   |                                                                                   | 0.2                                                                               |      |   |   |  |
| Approach LOS                  | D                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |      |   |   |  |
| Timer:                        |                                                                                   | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6    | 7 | 8 |  |
| Assigned Phs                  |                                                                                   |                                                                                   | 2                                                                                 | 8                                                                                 |                                                                                   |                                                                                   | 6    |   |   |  |
| Case No                       |                                                                                   |                                                                                   | 8.0                                                                               | 9.0                                                                               |                                                                                   |                                                                                   | 6.0  |   |   |  |
| Phs Duration (G+Y+Rc), s      |                                                                                   |                                                                                   | 67.9                                                                              | 22.1                                                                              |                                                                                   |                                                                                   | 67.9 |   |   |  |
| Change Period (Y+Rc), s       |                                                                                   |                                                                                   | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                   | 4.0  |   |   |  |
| Max Green (Gmax), s           |                                                                                   |                                                                                   | 37.0                                                                              | 45.0                                                                              |                                                                                   |                                                                                   | 37.0 |   |   |  |
| Max Allow Headway (MAH), s    |                                                                                   |                                                                                   | 4.0                                                                               | 4.3                                                                               |                                                                                   |                                                                                   | 4.2  |   |   |  |
| Max Q Clear (g_c+I1), s       |                                                                                   |                                                                                   | 3.8                                                                               | 17.0                                                                              |                                                                                   |                                                                                   | 4.1  |   |   |  |
| Green Ext Time (g_e), s       |                                                                                   |                                                                                   | 0.4                                                                               | 1.1                                                                               |                                                                                   |                                                                                   | 0.9  |   |   |  |
| Prob of Phs Call (p_c)        |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 1.00 |   |   |  |
| Prob of Max Out (p_x)         |                                                                                   |                                                                                   | 0.00                                                                              | 0.00                                                                              |                                                                                   |                                                                                   | 0.00 |   |   |  |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |  |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 5                                                                                 | 3                                                                                 |                                                                                   |                                                                                   | 1    |   |   |  |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 0                                                                                 | 1641                                                                              |                                                                                   |                                                                                   | 1170 |   |   |  |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |  |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 2                                                                                 | 8                                                                                 |                                                                                   |                                                                                   | 6    |   |   |  |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 1744                                                                              | 0                                                                                 |                                                                                   |                                                                                   | 1870 |   |   |  |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |  |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 12                                                                                | 18                                                                                |                                                                                   |                                                                                   | 16   |   |   |  |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 107                                                                               | 1460                                                                              |                                                                                   |                                                                                   | 0    |   |   |  |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |  |
| Assigned Mvmt                 |                                                                                   | 0                                                                                 | 5                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 1    | 0 | 0 |  |

Baseline

Synchro 9 Report



# HCM 7th Signalized Intersection Capacity Analysis

## 8: 12th Ave & Hume Ave

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|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     | L    |      |      |      | L    |      |      |      |
| Lanes in Grp                        | 0    | 0    | 1    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 21   | 0    | 0    | 105  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 1641 | 0    | 0    | 1170 | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.9  | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.9  | 0.0  | 0.0  | 2.1  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 1641 | 0    | 0    | 1170 | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 63.9 | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 62.1 | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 63.9 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 329  | 0    | 0    | 888  | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 | 0.12 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 820  | 0    | 0    | 888  | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.99 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 29.1 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 29.2 | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 8    | 0    | 0    | 6    | 0    | 0    |
| Lane Assignment             | T    |      |      |      |      |      |      |      |
| Lanes in Grp                | 0    | 0    | 0    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 0    | 0    | 0    | 0    | 138  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 0    | 0    | 0    | 0    | 1870 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 0    | 0    | 0    | 0    | 1329 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 0    | 0    | 0    | 0    | 1329 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.99 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 8: 12th Ave & Hume Ave

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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 18   | 0    | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      |      |      |      |      |
| Lanes in Grp                     | 0    | 1    | 1    | 0    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 121  | 252  | 0    | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1851 | 1460 | 0    | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 1.8  | 15.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 1.8  | 15.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.06 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1315 | 293  | 0    | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.09 | 0.86 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1315 | 730  | 0    | 0    | 0    | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 4.0  | 34.8 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.1  | 7.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 4.2  | 42.1 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.4  | 4.9  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.1  | 0.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.5  | 5.5  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.01 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 18.5 |
| HCM 7th LOS                  | B    |



# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

AM 2026+Project  
07/16/2024

| Movement                            | EBL | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|-------------------------------------|-----|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations                 |     |      |      | ←    | →    | →    | ←    | →    | →    |      | →    | →    |
| Traffic Volume (veh/h)              | 0   | 0    | 0    | 61   | 0    | 410  | 30   | 831  | 0    | 0    | 536  | 286  |
| Future Volume (veh/h)               | 0   | 0    | 0    | 61   | 0    | 410  | 30   | 831  | 0    | 0    | 536  | 286  |
| Number                              |     |      |      | 3    | 8    | 18   | 5    | 2    | 12   | 1    | 6    | 16   |
| Initial Q, veh                      |     |      |      | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Lane Width Adj.                     |     |      |      | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped-Bike Adj (A <sub>pbT</sub> )    |     |      |      | 1.00 |      | 1.00 | 1.00 |      | 1.00 | 1.00 |      | 1.00 |
| Parking Bus Adj                     |     |      |      | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach               |     |      |      | No   |      |      |      | No   |      |      |      | No   |
| Lanes Open During Work Zone         |     |      |      |      |      |      |      |      |      |      |      |      |
| Adj Sat Flow, veh/h/ln              |     |      |      | 1723 | 0    | 1723 | 1723 | 1870 | 0    | 0    | 1870 | 1723 |
| Adj Flow Rate, veh/h                |     |      |      | 66   | 0    | 446  | 33   | 903  | 0    | 0    | 583  | 311  |
| Peak Hour Factor                    |     |      |      | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, %                |     |      |      | 2    | 0    | 2    | 2    | 2    | 0    | 0    | 2    | 2    |
| Opposing Right Turn Influence       |     |      |      | Yes  |      |      | Yes  |      |      | No   |      |      |
| Cap, veh/h                          |     |      |      | 669  | 0    | 540  | 41   | 2494 | 0    | 0    | 3229 | 923  |
| HCM Platoon Ratio                   |     |      |      | 1.00 | 1.00 | 1.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Prop Arrive On Green                |     |      |      | 0.21 | 0.00 | 0.21 | 0.05 | 1.00 | 0.00 | 0.00 | 0.63 | 0.63 |
| Unsig. Movement Delay               |     |      |      |      |      |      |      |      |      |      |      |      |
| Ln Grp Delay, s/veh                 |     |      |      | 28.7 | 0.0  | 38.0 | 70.1 | 0.4  | 0.0  | 0.0  | 7.0  | 8.7  |
| Ln Grp LOS                          |     |      |      | C    |      | D    | E    | A    |      |      | A    | A    |
| Approach Vol, veh/h                 |     |      |      | 512  |      |      |      | 936  |      |      |      | 894  |
| Approach Delay, s/veh               |     |      |      | 36.8 |      |      |      | 2.8  |      |      |      | 7.6  |
| Approach LOS                        |     |      |      | D    |      |      |      | A    |      |      |      | A    |
| Timer:                              | 1   | 2    | 3    | 4    | 5    | 6    | 7    | 8    |      |      |      |      |
| Assigned Phs                        |     | 2    | 8    |      | 5    | 6    |      |      |      |      |      |      |
| Case No                             |     | 4.0  | 9.0  |      | 2.0  | 7.0  |      |      |      |      |      |      |
| Phs Duration (G+Y+Rc), s            |     | 67.2 | 22.8 |      | 6.2  | 60.9 |      |      |      |      |      |      |
| Change Period (Y+Rc), s             |     | 5.5  | 4.0  |      | 4.0  | 5.5  |      |      |      |      |      |      |
| Max Green (Gmax), s                 |     | 51.5 | 29.0 |      | 10.0 | 37.5 |      |      |      |      |      |      |
| Max Allow Headway (MAH), s          |     | 4.0  | 4.3  |      | 4.1  | 4.1  |      |      |      |      |      |      |
| Max Q Clear (g <sub>c</sub> +I1), s |     | 2.0  | 16.9 |      | 3.8  | 11.0 |      |      |      |      |      |      |
| Green Ext Time (g <sub>e</sub> ), s |     | 4.3  | 1.9  |      | 0.0  | 4.0  |      |      |      |      |      |      |
| Prob of Phs Call (p <sub>c</sub> )  |     | 1.00 | 1.00 |      | 0.56 | 1.00 |      |      |      |      |      |      |
| Prob of Max Out (p <sub>x</sub> )   |     | 0.00 | 0.05 |      | 0.05 | 0.00 |      |      |      |      |      |      |
| Left-Turn Movement Data             |     |      |      |      |      |      |      |      |      |      |      |      |
| Assigned Mvmt                       |     |      |      | 3    |      | 5    | 1    |      |      |      |      |      |
| Mvmt Sat Flow, veh/h                |     |      |      | 3183 |      | 1641 | 0    |      |      |      |      |      |
| Through Movement Data               |     |      |      |      |      |      |      |      |      |      |      |      |
| Assigned Mvmt                       |     | 2    | 8    |      |      | 6    |      |      |      |      |      |      |
| Mvmt Sat Flow, veh/h                |     | 3647 | 0    |      |      | 5274 |      |      |      |      |      |      |
| Right-Turn Movement Data            |     |      |      |      |      |      |      |      |      |      |      |      |
| Assigned Mvmt                       |     | 12   | 18   |      |      | 16   |      |      |      |      |      |      |
| Mvmt Sat Flow, veh/h                |     | 0    | 2569 |      |      | 1460 |      |      |      |      |      |      |
| Left Lane Group Data                |     |      |      |      |      |      |      |      |      |      |      |      |
| Assigned Mvmt                       | 0   | 0    | 3    | 0    | 5    | 1    | 0    | 0    |      |      |      |      |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

AM 2026+Project  
07/16/2024

|                                     |      |      |      |          |      |      |      |      |
|-------------------------------------|------|------|------|----------|------|------|------|------|
| Lane Assignment                     | L    |      |      | L (Prot) |      |      |      |      |
| Lanes in Grp                        | 0    | 0    | 2    | 0        | 1    | 0    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 66   | 0        | 33   | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 1591 | 0        | 1641 | 0    | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 1.5  | 0.0      | 1.8  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 1.5  | 0.0      | 1.8  | 0.0  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 1591 | 0        | 0    | 0    | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0        | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 56.9 | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 1.00 | 0.00     | 1.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 669  | 0        | 41   | 0    | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.10 | 0.00     | 0.81 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 1029 | 0        | 182  | 0    | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 1.00 | 0.00     | 0.92 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 28.7 | 0.0      | 42.5 | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.1  | 0.0      | 27.5 | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 28.7 | 0.0      | 70.1 | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.5  | 0.0      | 0.7  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0      | 0.3  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 0.00 | 1.00 | 0.00     | 1.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.5  | 0.0      | 1.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.05 | 0.00     | 0.06 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0        | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 8    | 0    | 0    | 6    | 0    | 0    |
| Lane Assignment             | T    |      |      | T    |      |      |      |      |
| Lanes in Grp                | 0    | 2    | 0    | 0    | 0    | 3    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 903  | 0    | 0    | 0    | 583  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1777 | 0    | 0    | 0    | 1702 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 4.3  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 4.3  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 2494 | 0    | 0    | 0    | 3229 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.36 | 0.00 | 0.00 | 0.00 | 0.18 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 2494 | 0    | 0    | 0    | 3229 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.92 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 6.9  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.4  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.4  | 0.0  | 0.0  | 0.0  | 7.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 1.1  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

AM 2026+Project  
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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.1  | 0.0  | 0.0  | 0.0  | 1.2  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 18   | 0    | 0    | 16   | 0    | 0    |
| Lane Assignment                  | R    |      |      | R    |      |      |      |      |
| Lanes in Grp                     | 0    | 0    | 2    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 0    | 446  | 0    | 0    | 311  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 0    | 1285 | 0    | 0    | 1460 | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 0.0  | 14.9 | 0.0  | 0.0  | 9.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 0.0  | 14.9 | 0.0  | 0.0  | 9.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 0    | 540  | 0    | 0    | 923  | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.00 | 0.83 | 0.00 | 0.00 | 0.34 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 0    | 831  | 0    | 0    | 923  | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 0.0  | 34.0 | 0.0  | 0.0  | 7.7  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.0  | 4.1  | 0.0  | 0.0  | 1.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 0.0  | 38.0 | 0.0  | 0.0  | 8.7  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.0  | 4.2  | 0.0  | 0.0  | 2.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.0  | 4.6  | 0.0  | 0.0  | 2.3  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.00 | 0.28 | 0.00 | 0.00 | 0.47 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 12.1 |
| HCM 7th LOS                  | B    |

# HCM 7th Signalized Intersection Capacity Analysis

## 2: 12th Ave & SR 198 WB EB Ramps

AM 2026+Project  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |  |                                                                                     |                                                                                     |  |  |
| Traffic Volume (veh/h)        | 312                                                                               | 0                                                                                 | 19                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 587                                                                                 | 151                                                                                 | 0                                                                                   | 327                                                                                 | 0                                                                                   |
| Future Volume (veh/h)         | 312                                                                               | 0                                                                                 | 19                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 587                                                                                 | 151                                                                                 | 0                                                                                   | 327                                                                                 | 0                                                                                   |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                |                                                                                   |                                                                                   |                                                                                   | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 0                                                                                 | 1723                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1870                                                                                | 1723                                                                                | 0                                                                                   | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 339                                                                               | 0                                                                                 | 21                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 638                                                                                 | 164                                                                                 | 0                                                                                   | 355                                                                                 | 0                                                                                   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 0                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Cap, veh/h                    | 448                                                                               | 0                                                                                 | 205                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2160                                                                                | 554                                                                                 | 0                                                                                   | 2742                                                                                | 1126                                                                                |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 2.00                                                                                | 2.00                                                                                | 1.00                                                                                | 2.00                                                                                | 2.00                                                                                |
| Prop Arrive On Green          | 0.14                                                                              | 0.00                                                                              | 0.14                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 39.8                                                                              | 0.0                                                                               | 33.9                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.0                                                                                 |
| Ln Grp LOS                    | D                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     | A                                                                                   | A                                                                                   |                                                                                     | A                                                                                   |                                                                                     |
| Approach Vol, veh/h           | 360                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 802                                                                                 |                                                                                     |                                                                                     | 355                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh         | 39.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.5                                                                                 |                                                                                     |                                                                                     | 0.1                                                                                 |                                                                                     |                                                                                     |
| Approach LOS                  | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Timer:                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       | 8.0                                                                               |                                                                                   | 9.0                                                                               |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 73.4                                                                              |                                                                                   | 16.6                                                                              |                                                                                   | 73.4                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | 5.5                                                                               |                                                                                   | 4.0                                                                               |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           | 51.5                                                                              |                                                                                   | 29.0                                                                              |                                                                                   | 51.5                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    | 4.1                                                                               |                                                                                   | 4.1                                                                               |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       | 2.0                                                                               |                                                                                   | 11.2                                                                              |                                                                                   | 2.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       | 3.2                                                                               |                                                                                   | 1.3                                                                               |                                                                                   | 1.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         | 0.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 5                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 1                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 0                                                                                 |                                                                                   | 3183                                                                              |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 2893                                                                              |                                                                                   | 0                                                                                 |                                                                                   | 3647                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 12                                                                                |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 719                                                                               |                                                                                   | 1460                                                                              |                                                                                   | 1460                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 2: 12th Ave & SR 198 WB EB Ramps

AM 2026+Project  
07/16/2024

|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     | L    |      |      |      |      |      |      |      |
| Lanes in Grp                        | 0    | 0    | 0    | 2    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 0    | 339  | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 0    | 1591 | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.0  | 9.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.0  | 9.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 0    | 1591 | 0    | 0    | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 69.4 | 0.0  | 0.0  | 0.0  | 69.4 | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 0    | 448  | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.00 | 0.76 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 0    | 1029 | 0    | 0    | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 0.0  | 37.2 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.0  | 2.6  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 0.0  | 39.8 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.0  | 3.3  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.0  | 3.5  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.00 | 0.17 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 0    |
| Lane Assignment             | T    |      |      |      | T    |      |      |      |
| Lanes in Grp                | 0    | 1    | 0    | 0    | 0    | 2    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 405  | 0    | 0    | 0    | 355  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1777 | 0    | 0    | 0    | 1777 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 1371 | 0    | 0    | 0    | 2742 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.30 | 0.00 | 0.00 | 0.00 | 0.13 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 1371 | 0    | 0    | 0    | 2742 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.91 | 0.00 | 0.00 | 0.00 | 0.99 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.5  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.5  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

Baseline

Synchro 9 Report



## HCM 7th Signalized Intersection Capacity Analysis

### 2: 12th Ave & SR 198 WB EB Ramps

AM 2026+Project  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

#### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      | R    |      |      |      |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 397  | 0    | 21   | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1741 | 0    | 1460 | 0    | 1460 | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 0.0  | 0.0  | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 0.0  | 0.0  | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.41 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1343 | 0    | 205  | 0    | 1126 | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.30 | 0.00 | 0.10 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1343 | 0    | 472  | 0    | 1126 | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 0.91 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 0.0  | 0.0  | 33.7 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.5  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 0.5  | 0.0  | 33.9 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.0  | 0.0  | 0.4  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.2  | 0.0  | 0.4  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

#### Intersection Summary

|                              |     |
|------------------------------|-----|
| HCM 7th Control Delay, s/veh | 9.7 |
| HCM 7th LOS                  | A   |

| Intersection                  |         |        |         |        |         |         |        |
|-------------------------------|---------|--------|---------|--------|---------|---------|--------|
| Intersection Delay, s/veh 5.3 |         |        |         |        |         |         |        |
| Intersection LOS A            |         |        |         |        |         |         |        |
| Approach                      | EB      |        | WB      |        | NB      |         | SB     |
| Entry Lanes                   | 1       |        | 1       |        | 1       |         | 1      |
| Conflicting Circle Lanes      | 1       |        | 1       |        | 1       |         | 1      |
| Adj Approach Flow, veh/h      | 429     |        | 466     |        | 0       |         | 219    |
| Demand Flow Rate, veh/h       | 437     |        | 475     |        | 0       |         | 224    |
| Vehicles Circulating, veh/h   | 396     |        | 124     |        | 329     |         | 406    |
| Vehicles Exiting, veh/h       | 231     |        | 205     |        | 354     |         | 124    |
| Ped Vol Crossing Leg, #/h     | 0       |        | 0       |        | 0       |         | 0      |
| Ped Cap Adj                   | 1.000   |        | 1.000   |        | 1.000   |         | 1.000  |
| Approach Delay, s/veh         | 4.8     |        | 5.3     |        | 0.0     |         | 6.5    |
| Approach LOS                  | A       |        | A       |        | -       |         | A      |
| Lane                          | Left    | Bypass | Left    | Bypass | Left    | Left    | Bypass |
| Designated Moves              | LT      | R      | LT      | R      | LTR     | LT      | R      |
| Assumed Moves                 | LT      |        | LT      |        | LTR     | LT      |        |
| RT Channelized                |         | Free   |         | Free   |         |         | Free   |
| Lane Util                     | 1.000   |        | 1.000   |        | 1.000   | 1.000   |        |
| Follow-Up Headway, s          | 2.609   |        | 2.609   |        | 2.609   | 2.609   |        |
| Critical Headway, s           | 4.976   |        | 4.976   |        | 4.976   | 4.976   |        |
| A (Intercept)                 | 1380    |        | 1380    |        | 1380    | 1380    |        |
| B (Slope)                     | 1.02e-3 |        | 1.02e-3 |        | 1.02e-3 | 1.02e-3 |        |
| Entry Flow, veh/h             | 286     | 151    | 406     | 69     | 0       | 222     | 2      |
| Cap Entry Lane, veh/h         | 921     | 1938   | 1216    | 1938   | 987     | 912     | 1938   |
| Entry HV Adj Factor           | 0.982   | 0.980  | 0.981   | 0.980  | 1.000   | 0.980   | 0.980  |
| Flow Entry, veh/h             | 281     | 148    | 398     | 68     | 0       | 217     | 2      |
| Cap Entry, veh/h              | 905     | 1900   | 1193    | 1900   | 987     | 893     | 1900   |
| V/C Ratio                     | 0.310   | 0.078  | 0.334   | 0.036  | 0.000   | 0.243   | 0.001  |
| Control Delay, s/veh          | 7.3     | 0.0    | 6.2     | 0.0    | 3.6     | 6.5     | 0.0    |
| LOS                           | A       | A      | A       | A      | A       | A       | A      |
| 95th %tile Queue, veh         | 1       | 0      | 1       | 0      | 0       | 1       | 0      |

# HCM 7th Signalized Intersection Capacity Analysis 4: SR 198 EB Ramps & Hanford Armona Rd

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|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)        | 84                                                                                | 5                                                                                 | 85                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 321                                                                                 | 37                                                                                  | 126                                                                                 | 146                                                                                 | 0                                                                                   |
| Future Volume (veh/h)         | 84                                                                                | 5                                                                                 | 85                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 321                                                                                 | 37                                                                                  | 126                                                                                 | 146                                                                                 | 0                                                                                   |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                |                                                                                   |                                                                                   |                                                                                   | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 0                                                                                   |
| Adj Flow Rate, veh/h          | 91                                                                                | 5                                                                                 | 92                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 349                                                                                 | 40                                                                                  | 137                                                                                 | 159                                                                                 | 0                                                                                   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |                                                                                     | Yes                                                                                 |
| Cap, veh/h                    | 147                                                                               | 0                                                                                 | 131                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1353                                                                                | 155                                                                                 | 534                                                                                 | 600                                                                                 | 0                                                                                   |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Prop Arrive On Green          | 0.09                                                                              | 0.09                                                                              | 0.09                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 0.82                                                                                | 0.80                                                                                | 0.82                                                                                | 0.82                                                                                | 0.00                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 43.7                                                                              | 0.0                                                                               | 46.5                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 2.3                                                                                 | 2.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Ln Grp LOS                    | D                                                                                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     | A                                                                                   | A                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h           | 183                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 389                                                                                 |                                                                                     |                                                                                     | 296                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh         | 45.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 2.3                                                                                 |                                                                                     |                                                                                     | 2.4                                                                                 |                                                                                     |                                                                                     |
| Approach LOS                  | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Timer:                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       | 8.0                                                                               |                                                                                   | 9.0                                                                               |                                                                                   | 8.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 77.9                                                                              |                                                                                   | 12.1                                                                              |                                                                                   | 77.9                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | 5.5                                                                               |                                                                                   | 4.1                                                                               |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           | 56.5                                                                              |                                                                                   | 23.9                                                                              |                                                                                   | 56.5                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    | 4.0                                                                               |                                                                                   | 4.2                                                                               |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       | 6.4                                                                               |                                                                                   | 7.5                                                                               |                                                                                   | 8.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       | 1.4                                                                               |                                                                                   | 0.5                                                                               |                                                                                   | 1.4                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        | 1.00                                                                              |                                                                                   | 0.99                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         | 0.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 5                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 1                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 0                                                                                 |                                                                                   | 1641                                                                              |                                                                                   | 579                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 1648                                                                              |                                                                                   | 0                                                                                 |                                                                                   | 731                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 12                                                                                |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 189                                                                               |                                                                                   | 1460                                                                              |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 4: SR 198 EB Ramps & Hanford Armona Rd

AM 2026+Project  
07/16/2024

|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     |      |      |      | L    |      | L+T  |      |      |
| Lanes in Grp                        | 0    | 0    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 0    | 91   | 0    | 296  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 0    | 1641 | 0    | 1309 | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.0  | 4.8  | 0.0  | 1.6  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.0  | 4.8  | 0.0  | 6.0  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 0    | 1641 | 0    | 1010 | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 73.9 | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 69.6 | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 1.6  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 73.9 | 0.0  | 0.0  | 0.0  | 2.3  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 2.3  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.46 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 0    | 147  | 0    | 1134 | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.00 | 0.62 | 0.00 | 0.26 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 0    | 438  | 0    | 1134 | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 0.0  | 39.5 | 0.0  | 1.8  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.0  | 4.2  | 0.0  | 0.6  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 0.0  | 43.7 | 0.0  | 2.4  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.0  | 1.8  | 0.0  | 0.2  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.2  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.0  | 2.0  | 0.0  | 0.3  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.00 | 0.14 | 0.00 | 0.07 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 0    |
| Lane Assignment             |      |      |      |      |      |      |      |      |
| Lanes in Grp                | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

Baseline

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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      |      |      |      |      |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 389  | 0    | 92   | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1836 | 0    | 1460 | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 4.4  | 0.0  | 5.5  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 4.4  | 0.0  | 5.5  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.10 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1509 | 0    | 131  | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.26 | 0.00 | 0.70 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1509 | 0    | 389  | 0    | 0    | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 1.8  | 0.0  | 39.8 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.4  | 0.0  | 6.7  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 2.3  | 0.0  | 46.5 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.2  | 0.0  | 1.8  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.2  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.4  | 0.0  | 2.1  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.04 | 0.00 | 0.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 11.3 |
| HCM 7th LOS                  | B    |

| Intersection              |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
|---------------------------|--------|-----------------------------------------------------------------------------------|------|--------|-----------------------------------------------------------------------------------|------|--------|-----------------------------------------------------------------------------------|-------|--------|-------------------------------------------------------------------------------------|-------|
| Int Delay, s/veh          | 1.5    |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
| Movement                  | EBL    | EBT                                                                               | EBR  | WBL    | WBT                                                                               | WBR  | NBL    | NBT                                                                               | NBR   | SBL    | SBT                                                                                 | SBR   |
| Lane Configurations       |        |  |      |        |  |      |        |  |       |        |  |       |
| Traffic Vol, veh/h        | 0      | 218                                                                               | 36   | 22     | 350                                                                               | 0    | 40     | 0                                                                                 | 14    | 0      | 0                                                                                   | 0     |
| Future Vol, veh/h         | 0      | 218                                                                               | 36   | 22     | 350                                                                               | 0    | 40     | 0                                                                                 | 14    | 0      | 0                                                                                   | 0     |
| Conflicting Peds, #/hr    | 0      | 0                                                                                 | 0    | 0      | 0                                                                                 | 0    | 0      | 0                                                                                 | 0     | 0      | 0                                                                                   | 0     |
| Sign Control              | Free   | Free                                                                              | Free | Free   | Free                                                                              | Free | Stop   | Stop                                                                              | Stop  | Stop   | Stop                                                                                | Stop  |
| RT Channelized            | -      | -                                                                                 | None | -      | -                                                                                 | None | -      | -                                                                                 | None  | -      | -                                                                                   | None  |
| Storage Length            | -      | -                                                                                 | -    | -      | -                                                                                 | -    | -      | -                                                                                 | -     | -      | -                                                                                   | -     |
| Veh in Median Storage, #  | -      | 0                                                                                 | -    | -      | 0                                                                                 | -    | -      | 0                                                                                 | -     | -      | 0                                                                                   | -     |
| Grade, %                  | -      | 0                                                                                 | -    | -      | 0                                                                                 | -    | -      | 0                                                                                 | -     | -      | 0                                                                                   | -     |
| Peak Hour Factor          | 92     | 92                                                                                | 92   | 92     | 92                                                                                | 92   | 92     | 92                                                                                | 92    | 92     | 92                                                                                  | 92    |
| Heavy Vehicles, %         | 2      | 2                                                                                 | 2    | 2      | 2                                                                                 | 2    | 2      | 2                                                                                 | 2     | 2      | 2                                                                                   | 2     |
| Mvmt Flow                 | 0      | 237                                                                               | 39   | 24     | 380                                                                               | 0    | 43     | 0                                                                                 | 15    | 0      | 0                                                                                   | 0     |
|                           |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
| Major/Minor               | Major1 |                                                                                   |      | Major2 |                                                                                   |      | Minor1 |                                                                                   |       | Minor2 |                                                                                     |       |
| Conflicting Flow All      | 380    | 0                                                                                 | 0    | 276    | 0                                                                                 | 0    | 685    | 685                                                                               | 257   | 665    | 704                                                                                 | 380   |
| Stage 1                   | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 257    | 257                                                                               | -     | 428    | 428                                                                                 | -     |
| Stage 2                   | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 428    | 428                                                                               | -     | 237    | 276                                                                                 | -     |
| Critical Hdwy             | 4.12   | -                                                                                 | -    | 4.12   | -                                                                                 | -    | 7.12   | 6.52                                                                              | 6.22  | 7.12   | 6.52                                                                                | 6.22  |
| Critical Hdwy Stg 1       | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 6.12   | 5.52                                                                              | -     | 6.12   | 5.52                                                                                | -     |
| Critical Hdwy Stg 2       | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 6.12   | 5.52                                                                              | -     | 6.12   | 5.52                                                                                | -     |
| Follow-up Hdwy            | 2.218  | -                                                                                 | -    | 2.218  | -                                                                                 | -    | 3.518  | 4.018                                                                             | 3.318 | 3.518  | 4.018                                                                               | 3.318 |
| Pot Cap-1 Maneuver        | 1178   | -                                                                                 | -    | 1287   | -                                                                                 | -    | 362    | 371                                                                               | 782   | 373    | 361                                                                                 | 667   |
| Stage 1                   | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 748    | 695                                                                               | -     | 605    | 584                                                                                 | -     |
| Stage 2                   | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 605    | 584                                                                               | -     | 766    | 682                                                                                 | -     |
| Platoon blocked, %        |        | -                                                                                 | -    |        | -                                                                                 | -    |        |                                                                                   |       |        |                                                                                     |       |
| Mov Cap-1 Maneuver        | 1178   | -                                                                                 | -    | 1287   | -                                                                                 | -    | 354    | 362                                                                               | 782   | 358    | 353                                                                                 | 667   |
| Mov Cap-2 Maneuver        | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 354    | 362                                                                               | -     | 358    | 353                                                                                 | -     |
| Stage 1                   | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 748    | 695                                                                               | -     | 590    | 571                                                                                 | -     |
| Stage 2                   | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 590    | 571                                                                               | -     | 751    | 682                                                                                 | -     |
|                           |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
| Approach                  | EB     |                                                                                   |      | WB     |                                                                                   |      | NB     |                                                                                   |       | SB     |                                                                                     |       |
| HCM Control Delay, s/v    | 0      |                                                                                   |      | 0.46   |                                                                                   |      | 15.18  |                                                                                   |       | 0      |                                                                                     |       |
| HCM LOS                   |        |                                                                                   |      |        |                                                                                   |      | C      |                                                                                   |       | A      |                                                                                     |       |
|                           |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
| Minor Lane/Major Mvmt     | NBLn1  | EBL                                                                               | EBT  | EBR    | WBL                                                                               | WBT  | WBR    | SBLn1                                                                             |       |        |                                                                                     |       |
| Capacity (veh/h)          | 412    | 1178                                                                              | -    | -      | 106                                                                               | -    | -      | -                                                                                 |       |        |                                                                                     |       |
| HCM Lane V/C Ratio        | 0.142  | -                                                                                 | -    | -      | 0.019                                                                             | -    | -      | -                                                                                 |       |        |                                                                                     |       |
| HCM Control Delay (s/veh) | 15.2   | 0                                                                                 | -    | -      | 7.9                                                                               | 0    | -      | 0                                                                                 |       |        |                                                                                     |       |
| HCM Lane LOS              | C      | A                                                                                 | -    | -      | A                                                                                 | A    | -      | A                                                                                 |       |        |                                                                                     |       |
| HCM 95th %tile Q(veh)     | 0.5    | 0                                                                                 | -    | -      | 0.1                                                                               | -    | -      | -                                                                                 |       |        |                                                                                     |       |

# HCM 7th Signalized Intersection Capacity Analysis

## 6: 12th Ave & Hanford Armona Rd

AM 2026+Project  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |  |  |  |  |  |   |  |  |  |  |  |
| Traffic Volume (veh/h)        | 188                                                                               | 261                                                                               | 65                                                                                | 29                                                                                | 211                                                                               | 209                                                                               | 88                                                                                  | 345                                                                                 | 33                                                                                  | 101                                                                                 | 183                                                                                 | 73                                                                                  |
| Future Volume (veh/h)         | 188                                                                               | 261                                                                               | 65                                                                                | 29                                                                                | 211                                                                               | 209                                                                               | 88                                                                                  | 345                                                                                 | 33                                                                                  | 101                                                                                 | 183                                                                                 | 73                                                                                  |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                                | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 204                                                                               | 284                                                                               | 71                                                                                | 32                                                                                | 229                                                                               | 227                                                                               | 96                                                                                  | 375                                                                                 | 36                                                                                  | 110                                                                                 | 199                                                                                 | 79                                                                                  |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Cap, veh/h                    | 261                                                                               | 592                                                                               | 462                                                                               | 67                                                                                | 371                                                                               | 290                                                                               | 147                                                                                 | 1668                                                                                | 159                                                                                 | 417                                                                                 | 941                                                                                 | 361                                                                                 |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.33                                                                                | 0.33                                                                                | 0.33                                                                                | 2.00                                                                                | 2.00                                                                                | 2.00                                                                                |
| Prop Arrive On Green          | 0.16                                                                              | 0.32                                                                              | 0.32                                                                              | 0.04                                                                              | 0.20                                                                              | 0.20                                                                              | 0.03                                                                                | 0.17                                                                                | 0.16                                                                                | 0.75                                                                                | 0.75                                                                                | 0.72                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 46.6                                                                              | 25.4                                                                              | 22.2                                                                              | 47.2                                                                              | 34.6                                                                              | 41.1                                                                              | 48.9                                                                                | 22.6                                                                                | 22.6                                                                                | 9.0                                                                                 | 8.0                                                                                 | 8.7                                                                                 |
| Ln Grp LOS                    | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 | D                                                                                 | D                                                                                   | C                                                                                   | C                                                                                   | A                                                                                   | A                                                                                   | A                                                                                   |
| Approach Vol, veh/h           |                                                                                   | 559                                                                               |                                                                                   |                                                                                   | 488                                                                               |                                                                                   |                                                                                     | 507                                                                                 |                                                                                     |                                                                                     | 388                                                                                 |                                                                                     |
| Approach Delay, s/veh         |                                                                                   | 32.7                                                                              |                                                                                   |                                                                                   | 38.5                                                                              |                                                                                   |                                                                                     | 27.6                                                                                |                                                                                     |                                                                                     | 8.5                                                                                 |                                                                                     |
| Approach LOS                  |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Timer:                        |                                                                                   | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                   | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  |                                                                                   | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       |                                                                                   | 4.0                                                                               | 2.0                                                                               | 3.0                                                                               | 2.0                                                                               | 6.3                                                                               | 2.0                                                                                 | 3.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      |                                                                                   | 49.8                                                                              | 7.7                                                                               | 32.5                                                                              | 12.1                                                                              | 37.7                                                                              | 18.3                                                                                | 21.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       |                                                                                   | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                                 | 5.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           |                                                                                   | 35.1                                                                              | 4.8                                                                               | 33.6                                                                              | 7.5                                                                               | 22.1                                                                              | 15.5                                                                                | 22.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    |                                                                                   | 4.0                                                                               | 4.1                                                                               | 4.1                                                                               | 4.1                                                                               | 4.5                                                                               | 4.1                                                                                 | 4.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       |                                                                                   | 11.0                                                                              | 3.7                                                                               | 13.0                                                                              | 7.2                                                                               | 5.7                                                                               | 12.7                                                                                | 15.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       |                                                                                   | 1.4                                                                               | 0.0                                                                               | 1.2                                                                               | 0.0                                                                               | 1.5                                                                               | 0.2                                                                                 | 1.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        |                                                                                   | 1.00                                                                              | 0.55                                                                              | 1.00                                                                              | 0.91                                                                              | 1.00                                                                              | 0.99                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         |                                                                                   | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.01                                                                              | 1.00                                                                                | 0.24                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 3                                                                                 |                                                                                   | 5                                                                                 | 1                                                                                 | 7                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 1641                                                                              |                                                                                   | 1641                                                                              | 898                                                                               | 1641                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 3278                                                                              |                                                                                   | 1870                                                                              |                                                                                   | 2511                                                                              |                                                                                     | 1870                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 12                                                                                |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                  |                                                                                     |                                                                                     | 18                                                                                  |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 313                                                                               |                                                                                   | 1460                                                                              |                                                                                   | 963                                                                                 |                                                                                     |                                                                                     | 1460                                                                                |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 0                                                                                 | 3                                                                                 | 0                                                                                 | 5                                                                                 | 1                                                                                 | 7                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 6: 12th Ave & Hanford Armona Rd

AM 2026+Project  
07/16/2024

| Lane Assignment                     | L (Prot) |      | L (Prot) |      | L L (Prot) |      |      |      |
|-------------------------------------|----------|------|----------|------|------------|------|------|------|
| Lanes in Grp                        | 0        | 0    | 1        | 0    | 1          | 1    | 1    | 0    |
| Grp Vol (v), veh/h                  | 0        | 0    | 32       | 0    | 96         | 110  | 204  | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0        | 0    | 1641     | 0    | 1641       | 898  | 1641 | 0    |
| Q Serve Time (g_s), s               | 0.0      | 0.0  | 1.7      | 0.0  | 5.2        | 3.7  | 10.7 | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0      | 0.0  | 1.7      | 0.0  | 5.2        | 3.7  | 10.7 | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0        | 0    | 0        | 0    | 0          | 898  | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0        | 0    | 0        | 0    | 0          | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0      | 0.0  | 0.0      | 0.0  | 0.0        | 33.7 | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0      | 0.0  | 0.0      | 0.0  | 0.0        | 33.7 | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0      | 0.0  | 0.0      | 0.0  | 0.0        | 3.7  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0      | 0.0  | 0.0      | 0.0  | 0.0        | 0.0  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0      | 0.0  | 0.0      | 0.0  | 0.0        | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00     | 0.00 | 1.00     | 0.00 | 1.00       | 1.00 | 1.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0        | 0    | 67       | 0    | 147        | 417  | 261  | 0    |
| V/C Ratio (X)                       | 0.00     | 0.00 | 0.47     | 0.00 | 0.65       | 0.26 | 0.78 | 0.00 |
| Avail Cap (c_a), veh/h              | 0        | 0    | 115      | 0    | 164        | 417  | 310  | 0    |
| Upstream Filter (I)                 | 0.00     | 0.00 | 0.99     | 0.00 | 0.86       | 1.00 | 1.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0      | 0.0  | 42.2     | 0.0  | 42.3       | 7.5  | 36.3 | 0.0  |
| Incr Delay (d2), s/veh              | 0.0      | 0.0  | 5.0      | 0.0  | 6.6        | 1.5  | 10.3 | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0      | 0.0  | 0.0      | 0.0  | 0.0        | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0      | 0.0  | 47.2     | 0.0  | 48.9       | 9.0  | 46.6 | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0      | 0.0  | 0.7      | 0.0  | 2.0        | 0.5  | 4.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0      | 0.0  | 0.1      | 0.0  | 0.3        | 0.2  | 0.7  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0      | 0.0  | 0.0      | 0.0  | 0.0        | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00     | 0.00 | 1.00     | 0.00 | 1.00       | 1.00 | 1.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0      | 0.0  | 0.7      | 0.0  | 2.3        | 0.7  | 4.7  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00     | 0.00 | 0.38     | 0.00 | 0.29       | 0.09 | 0.80 | 0.00 |
| Initial Q (Qb), veh                 | 0.0      | 0.0  | 0.0      | 0.0  | 0.0        | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0      | 0.0  | 0.0      | 0.0  | 0.0        | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0      | 0.0  | 0.0      | 0.0  | 0.0        | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0      | 0.0  | 0.0      | 0.0  | 0.0        | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0        | 0    | 0        | 0    | 0          | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0      | 0.0  | 0.0      | 0.0  | 0.0        | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 8    |
| Lane Assignment             | T    |      | T    |      | T    |      | T    |      |
| Lanes in Grp                | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 1    |
| Grp Vol (v), veh/h          | 0    | 202  | 0    | 284  | 0    | 139  | 0    | 229  |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1777 | 0    | 1870 | 0    | 1777 | 0    | 1870 |
| Q Serve Time (g_s), s       | 0.0  | 8.9  | 0.0  | 11.0 | 0.0  | 2.1  | 0.0  | 10.1 |
| Cycle Q Clear Time (g_c), s | 0.0  | 8.9  | 0.0  | 11.0 | 0.0  | 2.1  | 0.0  | 10.1 |
| Lane Grp Cap (c), veh/h     | 0    | 904  | 0    | 592  | 0    | 666  | 0    | 371  |
| V/C Ratio (X)               | 0.00 | 0.22 | 0.00 | 0.48 | 0.00 | 0.21 | 0.00 | 0.62 |
| Avail Cap (c_a), veh/h      | 0    | 904  | 0    | 729  | 0    | 666  | 0    | 507  |
| Upstream Filter (I)         | 0.00 | 0.86 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.99 |
| Uniform Delay (d1), s/veh   | 0.0  | 22.1 | 0.0  | 24.8 | 0.0  | 7.3  | 0.0  | 33.0 |
| Incr Delay (d2), s/veh      | 0.0  | 0.5  | 0.0  | 0.6  | 0.0  | 0.7  | 0.0  | 1.7  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 22.6 | 0.0  | 25.4 | 0.0  | 8.0  | 0.0  | 34.6 |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 3.5  | 0.0  | 4.4  | 0.0  | 0.7  | 0.0  | 4.2  |

Baseline

Synchro 9 Report



# HCM 7th Signalized Intersection Capacity Analysis 6: 12th Ave & Hanford Armona Rd

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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.1  | 0.0  | 0.1  | 0.0  | 0.1  | 0.0  | 0.2  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 3.6  | 0.0  | 4.5  | 0.0  | 0.8  | 0.0  | 4.3  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.03 | 0.00 | 0.02 | 0.00 | 0.01 | 0.00 | 0.02 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 18   |
| Lane Assignment                  | T+R  |      | R    |      | T+R  |      | R    |      |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 1    |
| Grp Vol (v), veh/h               | 0    | 209  | 0    | 71   | 0    | 139  | 0    | 227  |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1814 | 0    | 1460 | 0    | 1697 | 0    | 1460 |
| Q Serve Time (g_s), s            | 0.0  | 9.0  | 0.0  | 3.1  | 0.0  | 2.4  | 0.0  | 13.3 |
| Cycle Q Clear Time (g_c), s      | 0.0  | 9.0  | 0.0  | 3.1  | 0.0  | 2.4  | 0.0  | 13.3 |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.17 | 0.00 | 1.00 | 0.00 | 0.57 | 0.00 | 1.00 |
| Lane Grp Cap (c), veh/h          | 0    | 923  | 0    | 462  | 0    | 636  | 0    | 290  |
| V/C Ratio (X)                    | 0.00 | 0.23 | 0.00 | 0.15 | 0.00 | 0.22 | 0.00 | 0.78 |
| Avail Cap (c_a), veh/h           | 0    | 923  | 0    | 569  | 0    | 636  | 0    | 396  |
| Upstream Filter (I)              | 0.00 | 0.86 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.99 |
| Uniform Delay (d1), s/veh        | 0.0  | 22.1 | 0.0  | 22.1 | 0.0  | 7.9  | 0.0  | 34.2 |
| Incr Delay (d2), s/veh           | 0.0  | 0.5  | 0.0  | 0.2  | 0.0  | 0.8  | 0.0  | 6.9  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 22.6 | 0.0  | 22.2 | 0.0  | 8.7  | 0.0  | 41.1 |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 3.6  | 0.0  | 1.0  | 0.0  | 0.7  | 0.0  | 4.3  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.1  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.6  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 3.8  | 0.0  | 1.0  | 0.0  | 0.9  | 0.0  | 4.9  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.03 | 0.00 | 0.25 | 0.00 | 0.01 | 0.00 | 2.47 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 28.0 |
| HCM 7th LOS                  | C    |

# HCM 7th Signalized Intersection Capacity Analysis

## 7: 11th Ave & Hanford Armona Rd

AM 2026+Project  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |  |  |  |  |                                                                                   |   |  |  |  |  |  |
| Traffic Volume (veh/h)        | 217                                                                               | 229                                                                               | 72                                                                                | 83                                                                                | 133                                                                               | 71                                                                                | 40                                                                                  | 297                                                                                 | 90                                                                                  | 50                                                                                  | 226                                                                                 | 104                                                                                 |
| Future Volume (veh/h)         | 217                                                                               | 229                                                                               | 72                                                                                | 83                                                                                | 133                                                                               | 71                                                                                | 40                                                                                  | 297                                                                                 | 90                                                                                  | 50                                                                                  | 226                                                                                 | 104                                                                                 |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                                | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 236                                                                               | 249                                                                               | 78                                                                                | 90                                                                                | 145                                                                               | 77                                                                                | 43                                                                                  | 323                                                                                 | 98                                                                                  | 54                                                                                  | 246                                                                                 | 113                                                                                 |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Cap, veh/h                    | 716                                                                               | 1211                                                                              | 945                                                                               | 655                                                                               | 744                                                                               | 395                                                                               | 224                                                                                 | 494                                                                                 | 385                                                                                 | 178                                                                                 | 494                                                                                 | 385                                                                                 |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Prop Arrive On Green          | 0.65                                                                              | 0.65                                                                              | 0.65                                                                              | 0.65                                                                              | 0.65                                                                              | 0.63                                                                              | 0.26                                                                                | 0.26                                                                                | 0.26                                                                                | 0.26                                                                                | 0.26                                                                                | 0.26                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 10.6                                                                              | 6.8                                                                               | 6.1                                                                               | 8.7                                                                               | 0.0                                                                               | 6.9                                                                               | 34.3                                                                                | 31.0                                                                                | 26.5                                                                                | 38.9                                                                                | 28.9                                                                                | 26.8                                                                                |
| Ln Grp LOS                    | B                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   | A                                                                                 | C                                                                                   | C                                                                                   | C                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h           |                                                                                   | 563                                                                               |                                                                                   |                                                                                   | 312                                                                               |                                                                                   |                                                                                     | 464                                                                                 |                                                                                     |                                                                                     | 413                                                                                 |                                                                                     |
| Approach Delay, s/veh         |                                                                                   | 8.3                                                                               |                                                                                   |                                                                                   | 7.4                                                                               |                                                                                   |                                                                                     | 30.3                                                                                |                                                                                     |                                                                                     | 29.6                                                                                |                                                                                     |
| Approach LOS                  |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer:                        |                                                                                   | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                   | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                   |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Case No                       |                                                                                   | 5.0                                                                               |                                                                                   |                                                                                   | 5.0                                                                               |                                                                                   | 5.0                                                                                 |                                                                                     | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      |                                                                                   | 27.7                                                                              |                                                                                   |                                                                                   | 62.3                                                                              |                                                                                   | 27.7                                                                                |                                                                                     | 62.3                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                   | 5.5                                                                               |                                                                                   | 5.5                                                                                 |                                                                                     | 5.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           |                                                                                   | 32.5                                                                              |                                                                                   |                                                                                   | 46.5                                                                              |                                                                                   | 32.5                                                                                |                                                                                     | 46.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    |                                                                                   | 4.2                                                                               |                                                                                   |                                                                                   | 4.4                                                                               |                                                                                   | 4.3                                                                                 |                                                                                     | 4.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       |                                                                                   | 15.8                                                                              |                                                                                   |                                                                                   | 17.0                                                                              |                                                                                   | 21.0                                                                                |                                                                                     | 10.6                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       |                                                                                   | 1.6                                                                               |                                                                                   |                                                                                   | 2.4                                                                               |                                                                                   | 1.2                                                                                 |                                                                                     | 1.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         |                                                                                   | 0.01                                                                              |                                                                                   |                                                                                   | 0.00                                                                              |                                                                                   | 0.05                                                                                |                                                                                     | 0.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   | 7                                                                                 |                                                                                   | 1                                                                                   |                                                                                     | 3                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 942                                                                               |                                                                                   |                                                                                   | 1067                                                                              |                                                                                   | 890                                                                                 |                                                                                     | 970                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                   |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 1870                                                                              |                                                                                   |                                                                                   | 1870                                                                              |                                                                                   | 1870                                                                                |                                                                                     | 1150                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 12                                                                                |                                                                                   |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                  |                                                                                     | 18                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 1460                                                                              |                                                                                   |                                                                                   | 1460                                                                              |                                                                                   | 1460                                                                                |                                                                                     | 611                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                   | 0                                                                                   | 3                                                                                   |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 7: 11th Ave & Hanford Armona Rd

AM 2026+Project  
07/16/2024

|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     |      | L    |      | L    |      | L    |      | L    |
| Lanes in Grp                        | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 1    |
| Grp Vol (v), veh/h                  | 0    | 43   | 0    | 236  | 0    | 54   | 0    | 90   |
| Grp Sat Flow (s), veh/h/ln          | 0    | 942  | 0    | 1067 | 0    | 890  | 0    | 970  |
| Q Serve Time (g_s), s               | 0.0  | 3.6  | 0.0  | 10.3 | 0.0  | 5.2  | 0.0  | 3.7  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 13.7 | 0.0  | 15.0 | 0.0  | 19.0 | 0.0  | 8.6  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 942  | 0    | 1067 | 0    | 890  | 0    | 970  |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 23.7 | 0.0  | 58.3 | 0.0  | 23.7 | 0.0  | 58.3 |
| Perm LT Serve Time (g_u), s         | 0.0  | 13.7 | 0.0  | 53.6 | 0.0  | 9.9  | 0.0  | 53.4 |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 3.6  | 0.0  | 10.3 | 0.0  | 5.2  | 0.0  | 3.7  |
| Time to First Blk (g_f), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Lane Grp Cap (c), veh/h             | 0    | 224  | 0    | 716  | 0    | 178  | 0    | 655  |
| V/C Ratio (X)                       | 0.00 | 0.19 | 0.00 | 0.33 | 0.00 | 0.30 | 0.00 | 0.14 |
| Avail Cap (c_a), veh/h              | 0    | 331  | 0    | 716  | 0    | 279  | 0    | 655  |
| Upstream Filter (I)                 | 0.00 | 1.00 | 0.00 | 0.91 | 0.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 33.9 | 0.0  | 9.5  | 0.0  | 37.9 | 0.0  | 8.2  |
| Incr Delay (d2), s/veh              | 0.0  | 0.4  | 0.0  | 1.1  | 0.0  | 0.9  | 0.0  | 0.4  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 34.3 | 0.0  | 10.6 | 0.0  | 38.9 | 0.0  | 8.7  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.8  | 0.0  | 1.8  | 0.0  | 1.0  | 0.0  | 0.6  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.1  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.8  | 0.0  | 2.1  | 0.0  | 1.1  | 0.0  | 0.7  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.18 | 0.00 | 0.53 | 0.00 | 0.40 | 0.00 | 0.18 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 8    |
| Lane Assignment             |      | T    |      | T    |      | T    |      |      |
| Lanes in Grp                | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 323  | 0    | 249  | 0    | 246  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1870 | 0    | 1870 | 0    | 1870 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 13.8 | 0.0  | 4.9  | 0.0  | 10.0 | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 13.8 | 0.0  | 4.9  | 0.0  | 10.0 | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 494  | 0    | 1211 | 0    | 494  | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.65 | 0.00 | 0.21 | 0.00 | 0.50 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 707  | 0    | 1211 | 0    | 707  | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 1.00 | 0.00 | 0.91 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 29.5 | 0.0  | 6.5  | 0.0  | 28.1 | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 1.5  | 0.0  | 0.4  | 0.0  | 0.8  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 31.0 | 0.0  | 6.8  | 0.0  | 28.9 | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 5.6  | 0.0  | 1.4  | 0.0  | 4.1  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 7: 11th Ave & Hanford Armona Rd

AM 2026+Project  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.2  | 0.0  | 0.1  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 5.8  | 0.0  | 1.5  | 0.0  | 4.2  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.08 | 0.00 | 0.01 | 0.00 | 0.04 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 18   |
| Lane Assignment                  |      | R    |      | R    |      | R    |      | T+R  |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 1    |
| Grp Vol (v), veh/h               | 0    | 98   | 0    | 78   | 0    | 113  | 0    | 222  |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1460 | 0    | 1460 | 0    | 1460 | 0    | 1760 |
| Q Serve Time (g_s), s            | 0.0  | 4.8  | 0.0  | 1.8  | 0.0  | 5.6  | 0.0  | 4.7  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 4.8  | 0.0  | 1.8  | 0.0  | 5.6  | 0.0  | 4.7  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.35 |
| Lane Grp Cap (c), veh/h          | 0    | 385  | 0    | 945  | 0    | 385  | 0    | 1139 |
| V/C Ratio (X)                    | 0.00 | 0.25 | 0.00 | 0.08 | 0.00 | 0.29 | 0.00 | 0.19 |
| Avail Cap (c_a), veh/h           | 0    | 552  | 0    | 945  | 0    | 552  | 0    | 1139 |
| Upstream Filter (I)              | 0.00 | 1.00 | 0.00 | 0.91 | 0.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 26.1 | 0.0  | 5.9  | 0.0  | 26.4 | 0.0  | 6.5  |
| Incr Delay (d2), s/veh           | 0.0  | 0.3  | 0.0  | 0.2  | 0.0  | 0.4  | 0.0  | 0.4  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 26.5 | 0.0  | 6.1  | 0.0  | 26.8 | 0.0  | 6.9  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 1.5  | 0.0  | 0.4  | 0.0  | 1.8  | 0.0  | 1.2  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 1.6  | 0.0  | 0.4  | 0.0  | 1.8  | 0.0  | 1.4  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.39 | 0.00 | 0.22 | 0.00 | 0.23 | 0.00 | 0.01 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 19.0 |
| HCM 7th LOS                  | B    |

# HCM 7th Signalized Intersection Capacity Analysis

## 8: 12th Ave & Hume Ave

AM 2026+Project  
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|                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|---|---|---|
|                               |  |  |  |  |  |  |      |   |   |   |
| Movement                      | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |      |   |   |   |
| Lane Configurations           |  |  |  |                                                                                   |  |  |      |   |   |   |
| Traffic Volume (veh/h)        | 19                                                                                | 232                                                                               | 105                                                                               | 6                                                                                 | 97                                                                                | 127                                                                               |      |   |   |   |
| Future Volume (veh/h)         | 19                                                                                | 232                                                                               | 105                                                                               | 6                                                                                 | 97                                                                                | 127                                                                               |      |   |   |   |
| Number                        | 3                                                                                 | 18                                                                                | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 |      |   |   |   |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |      |   |   |   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |   |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |      |   |   |   |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |   |
| Work Zone On Approach         | No                                                                                |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |      |   |   |   |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              |      |   |   |   |
| Adj Flow Rate, veh/h          | 21                                                                                | 252                                                                               | 114                                                                               | 7                                                                                 | 105                                                                               | 138                                                                               |      |   |   |   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |      |   |   |   |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |      |   |   |   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |      |   |   |   |
| Cap, veh/h                    | 329                                                                               | 293                                                                               | 1239                                                                              | 76                                                                                | 888                                                                               | 1329                                                                              |      |   |   |   |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                              | 2.00                                                                              |      |   |   |   |
| Prop Arrive On Green          | 0.20                                                                              | 0.20                                                                              | 0.71                                                                              | 0.71                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |   |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Ln Grp Delay, s/veh           | 29.2                                                                              | 42.1                                                                              | 0.0                                                                               | 4.2                                                                               | 0.3                                                                               | 0.2                                                                               |      |   |   |   |
| Ln Grp LOS                    | C                                                                                 | D                                                                                 |                                                                                   | A                                                                                 | A                                                                                 | A                                                                                 |      |   |   |   |
| Approach Vol, veh/h           | 273                                                                               |                                                                                   | 121                                                                               |                                                                                   |                                                                                   | 243                                                                               |      |   |   |   |
| Approach Delay, s/veh         | 41.1                                                                              |                                                                                   | 4.2                                                                               |                                                                                   |                                                                                   | 0.2                                                                               |      |   |   |   |
| Approach LOS                  | D                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |      |   |   |   |
| Timer:                        |                                                                                   | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6    | 7 | 8 |   |
| Assigned Phs                  |                                                                                   |                                                                                   | 2                                                                                 | 8                                                                                 |                                                                                   |                                                                                   | 6    |   |   |   |
| Case No                       |                                                                                   |                                                                                   | 8.0                                                                               | 9.0                                                                               |                                                                                   |                                                                                   | 6.0  |   |   |   |
| Phs Duration (G+Y+Rc), s      |                                                                                   |                                                                                   | 67.9                                                                              | 22.1                                                                              |                                                                                   |                                                                                   | 67.9 |   |   |   |
| Change Period (Y+Rc), s       |                                                                                   |                                                                                   | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                   | 4.0  |   |   |   |
| Max Green (Gmax), s           |                                                                                   |                                                                                   | 37.0                                                                              | 45.0                                                                              |                                                                                   |                                                                                   | 37.0 |   |   |   |
| Max Allow Headway (MAH), s    |                                                                                   |                                                                                   | 4.0                                                                               | 4.3                                                                               |                                                                                   |                                                                                   | 4.2  |   |   |   |
| Max Q Clear (g_c+I1), s       |                                                                                   |                                                                                   | 3.8                                                                               | 17.0                                                                              |                                                                                   |                                                                                   | 4.1  |   |   |   |
| Green Ext Time (g_e), s       |                                                                                   |                                                                                   | 0.4                                                                               | 1.1                                                                               |                                                                                   |                                                                                   | 0.9  |   |   |   |
| Prob of Phs Call (p_c)        |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 1.00 |   |   |   |
| Prob of Max Out (p_x)         |                                                                                   |                                                                                   | 0.00                                                                              | 0.00                                                                              |                                                                                   |                                                                                   | 0.00 |   |   |   |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 5                                                                                 | 3                                                                                 |                                                                                   |                                                                                   | 1    |   |   |   |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 0                                                                                 | 1641                                                                              |                                                                                   |                                                                                   | 1170 |   |   |   |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 2                                                                                 | 8                                                                                 |                                                                                   |                                                                                   | 6    |   |   |   |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 1744                                                                              | 0                                                                                 |                                                                                   |                                                                                   | 1870 |   |   |   |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 12                                                                                | 18                                                                                |                                                                                   |                                                                                   | 16   |   |   |   |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 107                                                                               | 1460                                                                              |                                                                                   |                                                                                   | 0    |   |   |   |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 0                                                                                 | 5                                                                                 | 3                                                                                 | 0                                                                                 | 0    | 1 | 0 | 0 |

Baseline

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# HCM 7th Signalized Intersection Capacity Analysis

## 8: 12th Ave & Hume Ave

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|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     |      |      | L    |      |      | L    |      |      |
| Lanes in Grp                        | 0    | 0    | 1    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 21   | 0    | 0    | 105  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 1641 | 0    | 0    | 1170 | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.9  | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.9  | 0.0  | 0.0  | 2.1  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 1641 | 0    | 0    | 1170 | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 63.9 | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 62.1 | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 63.9 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 329  | 0    | 0    | 888  | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 | 0.12 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 820  | 0    | 0    | 888  | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.99 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 29.1 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 29.2 | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 8    | 0    | 0    | 6    | 0    | 0    |
| Lane Assignment             | T    |      |      |      |      |      |      |      |
| Lanes in Grp                | 0    | 0    | 0    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 0    | 0    | 0    | 0    | 138  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 0    | 0    | 0    | 0    | 1870 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 0    | 0    | 0    | 0    | 1329 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 0    | 0    | 0    | 0    | 1329 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.99 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 8: 12th Ave & Hume Ave

AM 2026+Project  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 18   | 0    | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      |      |      |      |      |
| Lanes in Grp                     | 0    | 1    | 1    | 0    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 121  | 252  | 0    | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1851 | 1460 | 0    | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 1.8  | 15.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 1.8  | 15.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.06 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1315 | 293  | 0    | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.09 | 0.86 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1315 | 730  | 0    | 0    | 0    | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 4.0  | 34.8 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.1  | 7.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 4.2  | 42.1 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.4  | 4.9  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.1  | 0.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.5  | 5.5  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.01 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 18.5 |
| HCM 7th LOS                  | B    |





# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

AM 2044  
07/16/2024

| Movement                            | EBL | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|-------------------------------------|-----|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations                 |     |      |      | ↰    |      | ↰    | ↰    | ↰    |      |      | ↰    | ↰    |
| Traffic Volume (veh/h)              | 0   | 0    | 0    | 70   | 0    | 556  | 43   | 1113 | 0    | 0    | 728  | 401  |
| Future Volume (veh/h)               | 0   | 0    | 0    | 70   | 0    | 556  | 43   | 1113 | 0    | 0    | 728  | 401  |
| Number                              |     |      |      | 3    | 8    | 18   | 5    | 2    | 12   | 1    | 6    | 16   |
| Initial Q, veh                      |     |      |      | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Lane Width Adj.                     |     |      |      | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped-Bike Adj (A <sub>pbT</sub> )    |     |      |      | 1.00 |      | 1.00 | 1.00 |      | 1.00 | 1.00 |      | 1.00 |
| Parking Bus Adj                     |     |      |      | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach               |     |      |      | No   |      |      |      | No   |      |      |      | No   |
| Lanes Open During Work Zone         |     |      |      |      |      |      |      |      |      |      |      |      |
| Adj Sat Flow, veh/h/ln              |     |      |      | 1723 | 0    | 1723 | 1723 | 1870 | 0    | 0    | 1870 | 1723 |
| Adj Flow Rate, veh/h                |     |      |      | 76   | 0    | 604  | 47   | 1210 | 0    | 0    | 791  | 436  |
| Peak Hour Factor                    |     |      |      | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, %                |     |      |      | 2    | 0    | 2    | 2    | 2    | 0    | 0    | 2    | 2    |
| Opposing Right Turn Influence       |     |      |      | Yes  |      |      | Yes  |      |      | No   |      |      |
| Cap, veh/h                          |     |      |      | 866  | 0    | 699  | 57   | 2275 | 0    | 0    | 2863 | 819  |
| HCM Platoon Ratio                   |     |      |      | 1.00 | 1.00 | 1.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Prop Arrive On Green                |     |      |      | 0.27 | 0.00 | 0.27 | 0.07 | 1.00 | 0.00 | 0.00 | 0.56 | 0.56 |
| Unsig. Movement Delay               |     |      |      |      |      |      |      |      |      |      |      |      |
| Ln Grp Delay, s/veh                 |     |      |      | 24.5 | 0.0  | 38.5 | 62.0 | 0.8  | 0.0  | 0.0  | 10.5 | 14.9 |
| Ln Grp LOS                          |     |      |      | C    |      | D    | E    | A    |      |      | B    | B    |
| Approach Vol, veh/h                 |     |      |      | 680  |      |      |      | 1257 |      |      |      | 1227 |
| Approach Delay, s/veh               |     |      |      | 36.9 |      |      |      | 3.0  |      |      |      | 12.1 |
| Approach LOS                        |     |      |      | D    |      |      |      | A    |      |      |      | B    |
| Timer:                              | 1   | 2    | 3    | 4    | 5    | 6    | 7    | 8    |      |      |      |      |
| Assigned Phs                        |     | 2    | 8    |      | 5    | 6    |      |      |      |      |      |      |
| Case No                             |     | 4.0  | 9.0  |      | 2.0  | 7.0  |      |      |      |      |      |      |
| Phs Duration (G+Y+Rc), s            |     | 61.6 | 28.4 |      | 7.2  | 54.5 |      |      |      |      |      |      |
| Change Period (Y+Rc), s             |     | 5.5  | 4.0  |      | 4.0  | 5.5  |      |      |      |      |      |      |
| Max Green (Gmax), s                 |     | 49.5 | 31.0 |      | 7.0  | 38.5 |      |      |      |      |      |      |
| Max Allow Headway (MAH), s          |     | 4.0  | 4.3  |      | 4.1  | 4.1  |      |      |      |      |      |      |
| Max Q Clear (g <sub>c</sub> +I1), s |     | 2.0  | 22.1 |      | 4.5  | 18.8 |      |      |      |      |      |      |
| Green Ext Time (g <sub>e</sub> ), s |     | 6.6  | 2.2  |      | 0.0  | 5.5  |      |      |      |      |      |      |
| Prob of Phs Call (p <sub>c</sub> )  |     | 1.00 | 1.00 |      | 0.69 | 1.00 |      |      |      |      |      |      |
| Prob of Max Out (p <sub>x</sub> )   |     | 0.00 | 0.26 |      | 1.00 | 0.09 |      |      |      |      |      |      |
| Left-Turn Movement Data             |     |      |      |      |      |      |      |      |      |      |      |      |
| Assigned Mvmt                       |     |      |      | 3    |      | 5    | 1    |      |      |      |      |      |
| Mvmt Sat Flow, veh/h                |     |      |      | 3183 |      | 1641 | 0    |      |      |      |      |      |
| Through Movement Data               |     |      |      |      |      |      |      |      |      |      |      |      |
| Assigned Mvmt                       |     | 2    | 8    |      |      | 6    |      |      |      |      |      |      |
| Mvmt Sat Flow, veh/h                |     | 3647 | 0    |      |      | 5274 |      |      |      |      |      |      |
| Right-Turn Movement Data            |     |      |      |      |      |      |      |      |      |      |      |      |
| Assigned Mvmt                       |     |      | 12   | 18   |      | 16   |      |      |      |      |      |      |
| Mvmt Sat Flow, veh/h                |     |      | 0    | 2569 |      | 1460 |      |      |      |      |      |      |
| Left Lane Group Data                |     |      |      |      |      |      |      |      |      |      |      |      |
| Assigned Mvmt                       | 0   | 0    | 3    | 0    | 5    | 1    | 0    | 0    |      |      |      |      |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

AM 2044  
07/16/2024

|                                     |      |      |      |          |      |      |      |      |
|-------------------------------------|------|------|------|----------|------|------|------|------|
| Lane Assignment                     | L    |      |      | L (Prot) |      |      |      |      |
| Lanes in Grp                        | 0    | 0    | 2    | 0        | 1    | 0    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 76   | 0        | 47   | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 1591 | 0        | 1641 | 0    | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 1.6  | 0.0      | 2.5  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 1.6  | 0.0      | 2.5  | 0.0  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 1591 | 0        | 0    | 0    | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0        | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 50.5 | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 1.00 | 0.00     | 1.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 866  | 0        | 57   | 0    | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.09 | 0.00     | 0.82 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 1100 | 0        | 128  | 0    | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 1.00 | 0.00     | 0.84 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 24.4 | 0.0      | 41.6 | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.0  | 0.0      | 20.5 | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 24.5 | 0.0      | 62.0 | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.6  | 0.0      | 0.9  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0      | 0.3  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 0.00 | 1.00 | 0.00     | 1.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.6  | 0.0      | 1.3  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.05 | 0.00     | 0.08 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0        | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 8    | 0    | 0    | 6    | 0    | 0    |
| Lane Assignment             | T    |      |      | T    |      |      |      |      |
| Lanes in Grp                | 0    | 2    | 0    | 0    | 0    | 3    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 1210 | 0    | 0    | 0    | 791  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1777 | 0    | 0    | 0    | 1702 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 7.2  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 7.2  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 2275 | 0    | 0    | 0    | 2863 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.53 | 0.00 | 0.00 | 0.00 | 0.28 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 2275 | 0    | 0    | 0    | 2863 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.84 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 10.3 | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.8  | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.8  | 0.0  | 0.0  | 0.0  | 10.5 | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 2.2  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 2.2  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 18   | 0    | 0    | 16   | 0    | 0    |
| Lane Assignment                  | R    |      | R    |      |      |      |      |      |
| Lanes in Grp                     | 0    | 0    | 2    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 0    | 604  | 0    | 0    | 436  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 0    | 1285 | 0    | 0    | 1460 | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 0.0  | 20.1 | 0.0  | 0.0  | 16.8 | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 0.0  | 20.1 | 0.0  | 0.0  | 16.8 | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 0    | 699  | 0    | 0    | 819  | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.00 | 0.86 | 0.00 | 0.00 | 0.53 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 0    | 888  | 0    | 0    | 819  | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 0.0  | 31.2 | 0.0  | 0.0  | 12.4 | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.0  | 7.3  | 0.0  | 0.0  | 2.5  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 0.0  | 38.5 | 0.0  | 0.0  | 14.9 | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.0  | 5.6  | 0.0  | 0.0  | 4.3  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.0  | 0.7  | 0.0  | 0.0  | 0.6  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.0  | 6.3  | 0.0  | 0.0  | 4.9  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.00 | 0.39 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 13.8 |
| HCM 7th LOS                  | B    |

# HCM 7th Signalized Intersection Capacity Analysis

## 2: 12th Ave & SR 198 WB EB Ramps

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|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |  |                                                                                     |                                                                                     |  |  |
| Traffic Volume (veh/h)        | 424                                                                               | 0                                                                                 | 25                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 814                                                                                 | 185                                                                                 | 0                                                                                   | 428                                                                                 | 0                                                                                   |
| Future Volume (veh/h)         | 424                                                                               | 0                                                                                 | 25                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 814                                                                                 | 185                                                                                 | 0                                                                                   | 428                                                                                 | 0                                                                                   |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                |                                                                                   |                                                                                   |                                                                                   | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 0                                                                                 | 1723                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1870                                                                                | 1723                                                                                | 0                                                                                   | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 461                                                                               | 0                                                                                 | 27                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 885                                                                                 | 201                                                                                 | 0                                                                                   | 465                                                                                 | 0                                                                                   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 0                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Cap, veh/h                    | 573                                                                               | 0                                                                                 | 263                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2106                                                                                | 478                                                                                 | 0                                                                                   | 2602                                                                                | 1069                                                                                |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 0.33                                                                                | 0.33                                                                                | 1.00                                                                                | 0.33                                                                                | 0.33                                                                                |
| Prop Arrive On Green          | 0.18                                                                              | 0.00                                                                              | 0.18                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 0.24                                                                                | 0.24                                                                                | 0.00                                                                                | 0.24                                                                                | 0.00                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 38.1                                                                              | 0.0                                                                               | 31.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 18.7                                                                                | 18.8                                                                                | 0.0                                                                                 | 12.8                                                                                | 0.0                                                                                 |
| Ln Grp LOS                    | D                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     | B                                                                                   | B                                                                                   |                                                                                     | B                                                                                   |                                                                                     |
| Approach Vol, veh/h           | 488                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 1086                                                                                |                                                                                     |                                                                                     | 465                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh         | 37.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 18.7                                                                                |                                                                                     |                                                                                     | 12.8                                                                                |                                                                                     |                                                                                     |
| Approach LOS                  | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |
| Timer:                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       | 8.0                                                                               |                                                                                   | 9.0                                                                               |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 69.9                                                                              |                                                                                   | 20.1                                                                              |                                                                                   | 69.9                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | 5.5                                                                               |                                                                                   | 4.0                                                                               |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           | 54.5                                                                              |                                                                                   | 26.0                                                                              |                                                                                   | 54.5                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    | 4.1                                                                               |                                                                                   | 4.1                                                                               |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       | 25.4                                                                              |                                                                                   | 14.5                                                                              |                                                                                   | 11.3                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       | 4.6                                                                               |                                                                                   | 1.6                                                                               |                                                                                   | 2.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         | 0.01                                                                              |                                                                                   | 0.04                                                                              |                                                                                   | 0.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 5                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 1                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 0                                                                                 |                                                                                   | 3183                                                                              |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 2970                                                                              |                                                                                   | 0                                                                                 |                                                                                   | 3647                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 12                                                                                |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 653                                                                               |                                                                                   | 1460                                                                              |                                                                                   | 1460                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 2: 12th Ave & SR 198 WB EB Ramps

AM 2044  
07/16/2024

|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     | L    |      |      |      |      |      |      |      |
| Lanes in Grp                        | 0    | 0    | 0    | 2    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 0    | 461  | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 0    | 1591 | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.0  | 12.5 | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.0  | 12.5 | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 0    | 1591 | 0    | 0    | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 65.9 | 0.0  | 0.0  | 0.0  | 65.9 | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 0    | 573  | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.00 | 0.80 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 0    | 923  | 0    | 0    | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 0.0  | 35.4 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.0  | 2.7  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 0.0  | 38.1 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.0  | 4.4  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.0  | 4.7  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.00 | 0.23 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 0    |
| Lane Assignment             | T    |      |      |      | T    |      |      |      |
| Lanes in Grp                | 0    | 1    | 0    | 0    | 0    | 2    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 546  | 0    | 0    | 0    | 465  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1777 | 0    | 0    | 0    | 1777 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 23.4 | 0.0  | 0.0  | 0.0  | 9.3  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 23.4 | 0.0  | 0.0  | 0.0  | 9.3  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 1301 | 0    | 0    | 0    | 2602 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.42 | 0.00 | 0.00 | 0.00 | 0.18 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 1301 | 0    | 0    | 0    | 2602 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.70 | 0.00 | 0.00 | 0.00 | 0.97 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 18.0 | 0.0  | 0.0  | 0.0  | 12.7 | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.7  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 18.7 | 0.0  | 0.0  | 0.0  | 12.8 | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 10.8 | 0.0  | 0.0  | 0.0  | 2.8  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 2: 12th Ave & SR 198 WB EB Ramps

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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.3  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 11.0 | 0.0  | 0.0  | 0.0  | 2.9  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.19 | 0.00 | 0.00 | 0.00 | 0.13 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      | R    |      |      |      |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 540  | 0    | 27   | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1753 | 0    | 1460 | 0    | 1460 | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 23.4 | 0.0  | 1.4  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 23.4 | 0.0  | 1.4  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.37 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1283 | 0    | 263  | 0    | 1069 | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.42 | 0.00 | 0.10 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1283 | 0    | 423  | 0    | 1069 | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 0.70 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 18.1 | 0.0  | 30.8 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.7  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 18.8 | 0.0  | 31.0 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 10.7 | 0.0  | 0.5  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 10.9 | 0.0  | 0.5  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.19 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 21.9 |
| HCM 7th LOS                  | C    |

| Intersection                  |         |        |         |        |         |         |        |
|-------------------------------|---------|--------|---------|--------|---------|---------|--------|
| Intersection Delay, s/veh 8.0 |         |        |         |        |         |         |        |
| Intersection LOS A            |         |        |         |        |         |         |        |
| Approach                      | EB      |        | WB      |        | NB      |         | SB     |
| Entry Lanes                   | 1       |        | 1       |        | 1       |         | 1      |
| Conflicting Circle Lanes      | 1       |        | 1       |        | 1       |         | 1      |
| Adj Approach Flow, veh/h      | 537     |        | 676     |        | 0       |         | 344    |
| Demand Flow Rate, veh/h       | 548     |        | 689     |        | 0       |         | 351    |
| Vehicles Circulating, veh/h   | 566     |        | 157     |        | 424     |         | 575    |
| Vehicles Exiting, veh/h       | 356     |        | 267     |        | 500     |         | 157    |
| Ped Vol Crossing Leg, #/h     | 0       |        | 0       |        | 0       |         | 0      |
| Ped Cap Adj                   | 1.000   |        | 1.000   |        | 1.000   |         | 1.000  |
| Approach Delay, s/veh         | 7.2     |        | 7.1     |        | 0.0     |         | 10.9   |
| Approach LOS                  | A       |        | A       |        | -       |         | B      |
| Lane                          | Left    | Bypass | Left    | Bypass | Left    | Left    | Bypass |
| Designated Moves              | LT      | R      | LT      | R      | LTR     | LT      | R      |
| Assumed Moves                 | LT      |        | LT      |        | LTR     | LT      |        |
| RT Channelized                |         | Free   |         | Free   |         |         | Free   |
| Lane Util                     | 1.000   |        | 1.000   |        | 1.000   | 1.000   |        |
| Follow-Up Headway, s          | 2.609   |        | 2.609   |        | 2.609   | 2.609   |        |
| Critical Headway, s           | 4.976   |        | 4.976   |        | 4.976   | 4.976   |        |
| A (Intercept)                 | 1380    |        | 1380    |        | 1380    | 1380    |        |
| B (Slope)                     | 1.02e-3 |        | 1.02e-3 |        | 1.02e-3 | 1.02e-3 |        |
| Entry Flow, veh/h             | 357     | 191    | 575     | 114    | 0       | 348     | 3      |
| Cap Entry Lane, veh/h         | 775     | 1938   | 1176    | 1938   | 895     | 768     | 1938   |
| Entry HV Adj Factor           | 0.981   | 0.980  | 0.981   | 0.980  | 1.000   | 0.981   | 0.980  |
| Flow Entry, veh/h             | 350     | 187    | 564     | 112    | 0       | 341     | 3      |
| Cap Entry, veh/h              | 760     | 1900   | 1153    | 1900   | 895     | 753     | 1900   |
| V/C Ratio                     | 0.461   | 0.098  | 0.489   | 0.059  | 0.000   | 0.453   | 0.002  |
| Control Delay, s/veh          | 11.0    | 0.0    | 8.5     | 0.0    | 4.0     | 10.9    | 0.0    |
| LOS                           | B       | A      | A       | A      | A       | B       | A      |
| 95th %tile Queue, veh         | 2       | 0      | 3       | 0      | 0       | 2       | 0      |

# HCM 7th Signalized Intersection Capacity Analysis

## 4: SR 198 EB Ramps & Hanford Armona Rd

AM 2044  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)        | 137                                                                               | 2                                                                                 | 139                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 433                                                                                 | 33                                                                                  | 171                                                                                 | 197                                                                                 | 0                                                                                   |
| Future Volume (veh/h)         | 137                                                                               | 2                                                                                 | 139                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 433                                                                                 | 33                                                                                  | 171                                                                                 | 197                                                                                 | 0                                                                                   |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                |                                                                                   |                                                                                   |                                                                                   | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 0                                                                                   |
| Adj Flow Rate, veh/h          | 149                                                                               | 2                                                                                 | 151                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 471                                                                                 | 36                                                                                  | 186                                                                                 | 214                                                                                 | 0                                                                                   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Cap, veh/h                    | 215                                                                               | 0                                                                                 | 191                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1339                                                                                | 102                                                                                 | 460                                                                                 | 510                                                                                 | 0                                                                                   |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Prop Arrive On Green          | 0.13                                                                              | 0.13                                                                              | 0.13                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 0.78                                                                                | 0.76                                                                                | 0.78                                                                                | 0.78                                                                                | 0.00                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 41.4                                                                              | 0.0                                                                               | 45.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 3.7                                                                                 | 5.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Ln Grp LOS                    | D                                                                                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     | A                                                                                   | A                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h           | 300                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 507                                                                                 |                                                                                     |                                                                                     | 400                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh         | 43.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 3.7                                                                                 |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |                                                                                     |
| Approach LOS                  | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Timer:                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                               | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       | 8.0                                                                               |                                                                                   | 9.0                                                                               |                                                                                   | 8.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 74.2                                                                              |                                                                                   | 15.8                                                                              |                                                                                   | 74.2                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | 5.5                                                                               |                                                                                   | 4.1                                                                               |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           | 61.5                                                                              |                                                                                   | 18.9                                                                              |                                                                                   | 61.5                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    | 4.0                                                                               |                                                                                   | 4.2                                                                               |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       | 9.5                                                                               |                                                                                   | 11.0                                                                              |                                                                                   | 17.4                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       | 2.0                                                                               |                                                                                   | 0.7                                                                               |                                                                                   | 2.1                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         | 0.00                                                                              |                                                                                   | 0.14                                                                              |                                                                                   | 0.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 5                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 1                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 0                                                                                 |                                                                                   | 1641                                                                              |                                                                                   | 514                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 1716                                                                              |                                                                                   | 0                                                                                 |                                                                                   | 653                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 12                                                                                |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 131                                                                               |                                                                                   | 1460                                                                              |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report



# HCM 7th Signalized Intersection Capacity Analysis

## 4: SR 198 EB Ramps & Hanford Armona Rd

AM 2044  
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| Lane Assignment                     |      |      |      | L    |      | L+T  |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lanes in Grp                        | 0    | 0    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 0    | 149  | 0    | 400  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 0    | 1641 | 0    | 1167 | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.0  | 7.8  | 0.0  | 7.9  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.0  | 7.8  | 0.0  | 15.4 | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 0    | 1641 | 0    | 906  | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 70.2 | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 62.7 | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 7.9  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 70.2 | 0.0  | 0.0  | 0.0  | 2.3  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 2.3  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.46 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 0    | 215  | 0    | 969  | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.00 | 0.69 | 0.00 | 0.41 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 0    | 346  | 0    | 969  | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 0.0  | 37.4 | 0.0  | 4.1  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.0  | 4.0  | 0.0  | 1.3  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 0.0  | 41.4 | 0.0  | 5.4  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.0  | 2.9  | 0.0  | 0.8  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.3  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.0  | 3.1  | 0.0  | 1.1  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.00 | 0.22 | 0.00 | 0.22 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 0    |
| Lane Assignment             |      |      |      |      |      |      |      |      |
| Lanes in Grp                | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 4: SR 198 EB Ramps & Hanford Armona Rd

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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      |      |      |      |      |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 507  | 0    | 151  | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1847 | 0    | 1460 | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 7.5  | 0.0  | 9.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 7.5  | 0.0  | 9.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.07 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1441 | 0    | 191  | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.35 | 0.00 | 0.79 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1441 | 0    | 308  | 0    | 0    | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 3.0  | 0.0  | 37.9 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.7  | 0.0  | 7.1  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 3.7  | 0.0  | 45.0 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 1.0  | 0.0  | 3.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.3  | 0.0  | 0.4  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 1.3  | 0.0  | 3.4  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.12 | 0.00 | 0.24 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 14.1 |
| HCM 7th LOS                  | B    |

| Intersection              |        |      |      |        |       |      |        |       |       |        |       |       |
|---------------------------|--------|------|------|--------|-------|------|--------|-------|-------|--------|-------|-------|
| Int Delay, s/veh          | 3.1    |      |      |        |       |      |        |       |       |        |       |       |
| Movement                  | EBL    | EBT  | EBR  | WBL    | WBT   | WBR  | NBL    | NBT   | NBR   | SBL    | SBT   | SBR   |
| Lane Configurations       |        | ↕    |      |        | ↕     |      |        | ↕     |       |        | ↕     |       |
| Traffic Vol, veh/h        | 0      | 481  | 56   | 28     | 395   | 0    | 72     | 0     | 25    | 0      | 0     | 0     |
| Future Vol, veh/h         | 0      | 481  | 56   | 28     | 395   | 0    | 72     | 0     | 25    | 0      | 0     | 0     |
| Conflicting Peds, #/hr    | 0      | 0    | 0    | 0      | 0     | 0    | 0      | 0     | 0     | 0      | 0     | 0     |
| Sign Control              | Free   | Free | Free | Free   | Free  | Free | Stop   | Stop  | Stop  | Stop   | Stop  | Stop  |
| RT Channelized            | -      | -    | None | -      | -     | None | -      | -     | None  | -      | -     | None  |
| Storage Length            | -      | -    | -    | -      | -     | -    | -      | -     | -     | -      | -     | -     |
| Veh in Median Storage, #  | -      | 0    | -    | -      | 0     | -    | -      | 0     | -     | -      | 0     | -     |
| Grade, %                  | -      | 0    | -    | -      | 0     | -    | -      | 0     | -     | -      | 0     | -     |
| Peak Hour Factor          | 92     | 92   | 92   | 92     | 92    | 92   | 92     | 92    | 92    | 92     | 92    | 92    |
| Heavy Vehicles, %         | 2      | 2    | 2    | 2      | 2     | 2    | 2      | 2     | 2     | 2      | 2     | 2     |
| Mvmt Flow                 | 0      | 523  | 61   | 30     | 429   | 0    | 78     | 0     | 27    | 0      | 0     | 0     |
| Major/Minor               | Major1 |      |      | Major2 |       |      | Minor1 |       |       | Minor2 |       |       |
| Conflicting Flow All      | 429    | 0    | 0    | 584    | 0     | 0    | 1043   | 1043  | 553   | 1013   | 1074  | 429   |
| Stage 1                   | -      | -    | -    | -      | -     | -    | 553    | 553   | -     | 490    | 490   | -     |
| Stage 2                   | -      | -    | -    | -      | -     | -    | 490    | 490   | -     | 523    | 584   | -     |
| Critical Hdwy             | 4.12   | -    | -    | 4.12   | -     | -    | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1       | -      | -    | -    | -      | -     | -    | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2       | -      | -    | -    | -      | -     | -    | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy            | 2.218  | -    | -    | 2.218  | -     | -    | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver        | 1130   | -    | -    | 991    | -     | -    | 207    | 229   | 532   | 217    | 220   | 626   |
| Stage 1                   | -      | -    | -    | -      | -     | -    | 517    | 514   | -     | 560    | 549   | -     |
| Stage 2                   | -      | -    | -    | -      | -     | -    | 560    | 549   | -     | 537    | 498   | -     |
| Platoon blocked, %        | -      | -    | -    | -      | -     | -    | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver        | 1130   | -    | -    | 991    | -     | -    | 199    | 220   | 532   | 198    | 211   | 626   |
| Mov Cap-2 Maneuver        | -      | -    | -    | -      | -     | -    | 199    | 220   | -     | 198    | 211   | -     |
| Stage 1                   | -      | -    | -    | -      | -     | -    | 517    | 514   | -     | 537    | 526   | -     |
| Stage 2                   | -      | -    | -    | -      | -     | -    | 537    | 526   | -     | 510    | 498   | -     |
| Approach                  | EB     |      |      | WB     |       |      | NB     |       |       | SB     |       |       |
| HCM Control Delay, s/v    | 0      |      |      | 0.58   |       |      | 31.78  |       |       | 0      |       |       |
| HCM LOS                   |        |      |      |        |       |      | D      |       |       | A      |       |       |
| Minor Lane/Major Mvmt     | NBLn1  | EBL  | EBT  | EBR    | WBL   | WBT  | WBR    | SBLn1 |       |        |       |       |
| Capacity (veh/h)          | 237    | 1130 | -    | -      | 119   | -    | -      | -     |       |        |       |       |
| HCM Lane V/C Ratio        | 0.445  | -    | -    | -      | 0.031 | -    | -      | -     |       |        |       |       |
| HCM Control Delay (s/veh) | 31.8   | 0    | -    | -      | 8.7   | 0    | -      | 0     |       |        |       |       |
| HCM Lane LOS              | D      | A    | -    | -      | A     | A    | -      | A     |       |        |       |       |
| HCM 95th %tile Q(veh)     | 2.1    | 0    | -    | -      | 0.1   | -    | -      | -     |       |        |       |       |

# HCM 7th Signalized Intersection Capacity Analysis

## 6: 12th Ave & Hanford Armona Rd

AM 2044  
07/16/2024

|                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                               |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |  |  |  |  |  |   |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (veh/h)        | 163                                                                               | 272                                                                               | 63                                                                                | 40                                                                                | 294                                                                               | 286                                                                               | 112                                                                                 | 482                                                                                 | 46                                                                                  | 141                                                                                 | 255                                                                                 | 69                                                                                  |
| Future Volume (veh/h)         | 163                                                                               | 272                                                                               | 63                                                                                | 40                                                                                | 294                                                                               | 286                                                                               | 112                                                                                 | 482                                                                                 | 46                                                                                  | 141                                                                                 | 255                                                                                 | 69                                                                                  |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                                | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 177                                                                               | 296                                                                               | 68                                                                                | 43                                                                                | 320                                                                               | 311                                                                               | 122                                                                                 | 524                                                                                 | 50                                                                                  | 153                                                                                 | 277                                                                                 | 75                                                                                  |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Cap, veh/h                    | 233                                                                               | 822                                                                               | 642                                                                               | 79                                                                                | 646                                                                               | 504                                                                               | 305                                                                                 | 673                                                                                 | 64                                                                                  | 212                                                                                 | 413                                                                                 | 110                                                                                 |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.33                                                                                | 0.33                                                                                | 0.33                                                                                | 0.33                                                                                | 0.33                                                                                | 0.33                                                                                |
| Prop Arrive On Green          | 0.14                                                                              | 0.44                                                                              | 0.44                                                                              | 0.05                                                                              | 0.35                                                                              | 0.35                                                                              | 0.06                                                                                | 0.07                                                                                | 0.06                                                                                | 0.04                                                                                | 0.05                                                                                | 0.04                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 47.0                                                                              | 18.0                                                                              | 3.3                                                                               | 47.4                                                                              | 25.9                                                                              | 14.8                                                                              | 38.2                                                                                | 46.7                                                                                | 46.9                                                                                | 49.8                                                                                | 43.4                                                                                | 43.9                                                                                |
| Ln Grp LOS                    | D                                                                                 | B                                                                                 | A                                                                                 | D                                                                                 | C                                                                                 | B                                                                                 | D                                                                                   | D                                                                                   | D                                                                                   | D                                                                                   | D                                                                                   | D                                                                                   |
| Approach Vol, veh/h           | 541                                                                               |                                                                                   |                                                                                   |                                                                                   | 674                                                                               |                                                                                   |                                                                                     |                                                                                     | 696                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh         | 25.7                                                                              |                                                                                   |                                                                                   |                                                                                   | 22.1                                                                              |                                                                                   |                                                                                     |                                                                                     | 45.3                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                  | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Timer:                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 2                                                                                 | 1                                                                                 | 3                                                                                 | 4                                                                                 | 6                                                                                 | 5                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       | 4.0                                                                               | 2.0                                                                               | 2.0                                                                               | 3.0                                                                               | 4.0                                                                               | 2.0                                                                               | 2.0                                                                                 | 3.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 22.5                                                                              | 15.6                                                                              | 8.3                                                                               | 43.5                                                                              | 17.4                                                                              | 20.7                                                                              | 16.8                                                                                | 35.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | * 5.5                                                                             | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                                 | 5.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           | * 20                                                                              | 12.0                                                                              | 5.4                                                                               | 32.4                                                                              | 21.6                                                                              | 8.6                                                                               | 13.5                                                                                | 24.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    | 4.0                                                                               | 4.1                                                                               | 4.1                                                                               | 4.1                                                                               | 4.1                                                                               | 4.1                                                                               | 4.1                                                                                 | 4.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       | 16.2                                                                              | 10.3                                                                              | 4.3                                                                               | 11.5                                                                              | 11.0                                                                              | 8.4                                                                               | 11.3                                                                                | 14.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       | 0.8                                                                               | 0.1                                                                               | 0.0                                                                               | 1.2                                                                               | 0.9                                                                               | 0.0                                                                               | 0.1                                                                                 | 1.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        | 1.00                                                                              | 0.98                                                                              | 0.66                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.99                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.03                                                                              | 1.00                                                                              | 1.00                                                                                | 0.00                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 1                                                                                 | 3                                                                                 |                                                                                   |                                                                                   | 5                                                                                   | 7                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 1641                                                                              | 1641                                                                              |                                                                                   |                                                                                   | 1641                                                                                | 1641                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 3279                                                                              |                                                                                   |                                                                                   | 1870                                                                              |                                                                                   | 2777                                                                              | 1870                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 12                                                                                |                                                                                   |                                                                                   |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                  | 18                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 312                                                                               |                                                                                   |                                                                                   |                                                                                   | 1460                                                                              |                                                                                   | 738                                                                                 | 1460                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 1                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 5                                                                                 | 7                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 6: 12th Ave & Hanford Armona Rd

AM 2044  
07/16/2024

| Lane Assignment                     | L (Prot) |      | L (Prot) |      | L (Prot) |      | L (Prot) |      |
|-------------------------------------|----------|------|----------|------|----------|------|----------|------|
| Lanes in Grp                        | 0        | 1    | 1        | 0    | 0        | 1    | 1        | 0    |
| Grp Vol (v), veh/h                  | 0        | 153  | 43       | 0    | 0        | 122  | 177      | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0        | 1641 | 1641     | 0    | 0        | 1641 | 1641     | 0    |
| Q Serve Time (g_s), s               | 0.0      | 8.3  | 2.3      | 0.0  | 0.0      | 6.4  | 9.3      | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0      | 8.3  | 2.3      | 0.0  | 0.0      | 6.4  | 9.3      | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0        | 0    | 0        | 0    | 0        | 0    | 0        | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0        | 0    | 0        | 0    | 0        | 0    | 0        | 0    |
| Perm LT Eff Green (g_p), s          | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Time to First Blk (g_f), s          | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00     | 1.00 | 1.00     | 0.00 | 0.00     | 1.00 | 1.00     | 0.00 |
| Lane Grp Cap (c), veh/h             | 0        | 212  | 79       | 0    | 0        | 305  | 233      | 0    |
| V/C Ratio (X)                       | 0.00     | 0.72 | 0.54     | 0.00 | 0.00     | 0.40 | 0.76     | 0.00 |
| Avail Cap (c_a), veh/h              | 0        | 246  | 126      | 0    | 0        | 305  | 273      | 0    |
| Upstream Filter (I)                 | 0.00     | 0.99 | 0.98     | 0.00 | 0.00     | 0.86 | 1.00     | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0      | 41.5 | 41.9     | 0.0  | 0.0      | 37.4 | 37.1     | 0.0  |
| Incr Delay (d2), s/veh              | 0.0      | 8.3  | 5.6      | 0.0  | 0.0      | 0.7  | 9.9      | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Control Delay (d), s/veh            | 0.0      | 49.8 | 47.4     | 0.0  | 0.0      | 38.2 | 47.0     | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0      | 3.3  | 0.9      | 0.0  | 0.0      | 2.5  | 3.5      | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0      | 0.5  | 0.1      | 0.0  | 0.0      | 0.1  | 0.6      | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00     | 1.00 | 1.00     | 0.00 | 0.00     | 1.00 | 1.00     | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0      | 3.8  | 1.0      | 0.0  | 0.0      | 2.6  | 4.1      | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00     | 0.49 | 0.51     | 0.00 | 0.00     | 0.33 | 0.69     | 0.00 |
| Initial Q (Qb), veh                 | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Sat Delay (ds), s/veh               | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Sat Q (Qs), veh                     | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Sat Cap (cs), veh/h                 | 0        | 0    | 0        | 0    | 0        | 0    | 0        | 0    |
| Initial Q Clear Time (tc), h        | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 2    | 0    | 0    | 4    | 6    | 0    | 0    | 8    |
| Lane Assignment             | T    |      |      | T    | T    |      |      | T    |
| Lanes in Grp                | 1    | 0    | 0    | 1    | 1    | 0    | 0    | 1    |
| Grp Vol (v), veh/h          | 283  | 0    | 0    | 296  | 175  | 0    | 0    | 320  |
| Grp Sat Flow (s), veh/h/ln  | 1777 | 0    | 0    | 1870 | 1777 | 0    | 0    | 1870 |
| Q Serve Time (g_s), s       | 14.1 | 0.0  | 0.0  | 9.5  | 8.7  | 0.0  | 0.0  | 12.2 |
| Cycle Q Clear Time (g_c), s | 14.1 | 0.0  | 0.0  | 9.5  | 8.7  | 0.0  | 0.0  | 12.2 |
| Lane Grp Cap (c), veh/h     | 365  | 0    | 0    | 822  | 265  | 0    | 0    | 646  |
| V/C Ratio (X)               | 0.78 | 0.00 | 0.00 | 0.36 | 0.66 | 0.00 | 0.00 | 0.50 |
| Avail Cap (c_a), veh/h      | 419  | 0    | 0    | 822  | 456  | 0    | 0    | 646  |
| Upstream Filter (I)         | 0.86 | 0.00 | 0.00 | 1.00 | 0.99 | 0.00 | 0.00 | 0.98 |
| Uniform Delay (d1), s/veh   | 39.9 | 0.0  | 0.0  | 16.8 | 40.6 | 0.0  | 0.0  | 23.3 |
| Incr Delay (d2), s/veh      | 6.8  | 0.0  | 0.0  | 1.2  | 2.8  | 0.0  | 0.0  | 2.7  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 46.7 | 0.0  | 0.0  | 18.0 | 43.4 | 0.0  | 0.0  | 25.9 |
| 1st-Term Q (Q1), veh/ln     | 6.5  | 0.0  | 0.0  | 3.5  | 3.8  | 0.0  | 0.0  | 4.8  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 6: 12th Ave & Hanford Armona Rd

AM 2044  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.7  | 0.0  | 0.0  | 0.3  | 0.2  | 0.0  | 0.0  | 0.5  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln | 7.2  | 0.0  | 0.0  | 3.8  | 4.0  | 0.0  | 0.0  | 5.2  |
| %ile Storage Ratio (RQ%)     | 0.07 | 0.00 | 0.00 | 0.02 | 0.07 | 0.00 | 0.00 | 0.03 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 12   | 0    | 0    | 14   | 16   | 0    | 0    | 18   |
| Lane Assignment                  | T+R  |      |      | R    | T+R  |      |      | R    |
| Lanes in Grp                     | 1    | 0    | 0    | 1    | 1    | 0    | 0    | 1    |
| Grp Vol (v), veh/h               | 291  | 0    | 0    | 68   | 177  | 0    | 0    | 311  |
| Grp Sat Flow (s), veh/h/ln       | 1814 | 0    | 0    | 1460 | 1738 | 0    | 0    | 1460 |
| Q Serve Time (g_s), s            | 14.2 | 0.0  | 0.0  | 1.1  | 9.0  | 0.0  | 0.0  | 9.8  |
| Cycle Q Clear Time (g_c), s      | 14.2 | 0.0  | 0.0  | 1.1  | 9.0  | 0.0  | 0.0  | 9.8  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.17 | 0.00 | 0.00 | 1.00 | 0.42 | 0.00 | 0.00 | 1.00 |
| Lane Grp Cap (c), veh/h          | 372  | 0    | 0    | 642  | 259  | 0    | 0    | 504  |
| V/C Ratio (X)                    | 0.78 | 0.00 | 0.00 | 0.11 | 0.68 | 0.00 | 0.00 | 0.62 |
| Avail Cap (c_a), veh/h           | 427  | 0    | 0    | 642  | 446  | 0    | 0    | 504  |
| Upstream Filter (I)              | 0.86 | 0.00 | 0.00 | 1.00 | 0.99 | 0.00 | 0.00 | 0.98 |
| Uniform Delay (d1), s/veh        | 40.0 | 0.0  | 0.0  | 3.0  | 40.8 | 0.0  | 0.0  | 9.3  |
| Incr Delay (d2), s/veh           | 6.9  | 0.0  | 0.0  | 0.3  | 3.1  | 0.0  | 0.0  | 5.5  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 46.9 | 0.0  | 0.0  | 3.3  | 43.9 | 0.0  | 0.0  | 14.8 |
| 1st-Term Q (Q1), veh/ln          | 6.7  | 0.0  | 0.0  | 0.7  | 3.9  | 0.0  | 0.0  | 4.4  |
| 2nd-Term Q (Q2), veh/ln          | 0.7  | 0.0  | 0.0  | 0.1  | 0.2  | 0.0  | 0.0  | 0.8  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln     | 7.4  | 0.0  | 0.0  | 0.7  | 4.1  | 0.0  | 0.0  | 5.1  |
| %ile Storage Ratio (RQ%)         | 0.07 | 0.00 | 0.00 | 0.19 | 0.07 | 0.00 | 0.00 | 2.60 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 34.5 |
| HCM 7th LOS                  | C    |

### Notes

\* HCM 7th Edition computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 7th Signalized Intersection Capacity Analysis

## 7: 11th Ave & Hanford Armona Rd

AM 2044  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |  |  |  |  |                                                                                   |   |  |  |  |  |  |
| Traffic Volume (veh/h)        | 285                                                                               | 343                                                                               | 97                                                                                | 106                                                                               | 158                                                                               | 91                                                                                | 51                                                                                  | 417                                                                                 | 127                                                                                 | 70                                                                                  | 318                                                                                 | 126                                                                                 |
| Future Volume (veh/h)         | 285                                                                               | 343                                                                               | 97                                                                                | 106                                                                               | 158                                                                               | 91                                                                                | 51                                                                                  | 417                                                                                 | 127                                                                                 | 70                                                                                  | 318                                                                                 | 126                                                                                 |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                                | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 310                                                                               | 373                                                                               | 105                                                                               | 115                                                                               | 172                                                                               | 99                                                                                | 55                                                                                  | 453                                                                                 | 138                                                                                 | 76                                                                                  | 346                                                                                 | 137                                                                                 |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Cap, veh/h                    | 590                                                                               | 1081                                                                              | 844                                                                               | 479                                                                               | 644                                                                               | 370                                                                               | 233                                                                                 | 623                                                                                 | 487                                                                                 | 171                                                                                 | 623                                                                                 | 487                                                                                 |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Prop Arrive On Green          | 0.58                                                                              | 0.58                                                                              | 0.58                                                                              | 0.58                                                                              | 0.58                                                                              | 0.56                                                                              | 0.33                                                                                | 0.33                                                                                | 0.33                                                                                | 0.33                                                                                | 0.33                                                                                | 0.33                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 19.1                                                                              | 10.8                                                                              | 8.9                                                                               | 15.7                                                                              | 0.0                                                                               | 10.3                                                                              | 32.7                                                                                | 30.6                                                                                | 22.4                                                                                | 40.5                                                                                | 25.6                                                                                | 22.4                                                                                |
| Ln Grp LOS                    | B                                                                                 | B                                                                                 | A                                                                                 | B                                                                                 |                                                                                   | B                                                                                 | C                                                                                   | C                                                                                   | C                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h           |                                                                                   | 788                                                                               |                                                                                   |                                                                                   | 386                                                                               |                                                                                   |                                                                                     | 646                                                                                 |                                                                                     |                                                                                     | 559                                                                                 |                                                                                     |
| Approach Delay, s/veh         |                                                                                   | 13.8                                                                              |                                                                                   |                                                                                   | 11.9                                                                              |                                                                                   |                                                                                     | 29.1                                                                                |                                                                                     |                                                                                     | 26.8                                                                                |                                                                                     |
| Approach LOS                  |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer:                        |                                                                                   | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                   | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                   |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Case No                       |                                                                                   | 5.0                                                                               |                                                                                   |                                                                                   | 5.0                                                                               |                                                                                   | 5.0                                                                                 |                                                                                     | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      |                                                                                   | 34.0                                                                              |                                                                                   |                                                                                   | 56.0                                                                              |                                                                                   | 34.0                                                                                |                                                                                     | 56.0                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                   | 5.5                                                                               |                                                                                   | 5.5                                                                                 |                                                                                     | 5.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           |                                                                                   | 28.5                                                                              |                                                                                   |                                                                                   | 50.5                                                                              |                                                                                   | 28.5                                                                                |                                                                                     | 50.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    |                                                                                   | 4.2                                                                               |                                                                                   |                                                                                   | 4.4                                                                               |                                                                                   | 4.4                                                                                 |                                                                                     | 4.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       |                                                                                   | 21.2                                                                              |                                                                                   |                                                                                   | 28.7                                                                              |                                                                                   | 30.0                                                                                |                                                                                     | 19.0                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       |                                                                                   | 1.6                                                                               |                                                                                   |                                                                                   | 3.5                                                                               |                                                                                   | 0.0                                                                                 |                                                                                     | 1.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         |                                                                                   | 0.40                                                                              |                                                                                   |                                                                                   | 0.00                                                                              |                                                                                   | 1.00                                                                                |                                                                                     | 0.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   | 7                                                                                 |                                                                                   | 1                                                                                   |                                                                                     | 3                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 840                                                                               |                                                                                   |                                                                                   | 1021                                                                              |                                                                                   | 760                                                                                 |                                                                                     | 844                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                   |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 1870                                                                              |                                                                                   |                                                                                   | 1870                                                                              |                                                                                   | 1870                                                                                |                                                                                     | 1114                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 12                                                                                |                                                                                   |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                  |                                                                                     | 18                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 1460                                                                              |                                                                                   |                                                                                   | 1460                                                                              |                                                                                   | 1460                                                                                |                                                                                     | 641                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                   | 0                                                                                   | 3                                                                                   |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 7: 11th Ave & Hanford Armona Rd

AM 2044  
07/16/2024

|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     |      | L    |      | L    |      | L    |      | L    |
| Lanes in Grp                        | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 1    |
| Grp Vol (v), veh/h                  | 0    | 55   | 0    | 310  | 0    | 76   | 0    | 115  |
| Grp Sat Flow (s), veh/h/ln          | 0    | 840  | 0    | 1021 | 0    | 760  | 0    | 844  |
| Q Serve Time (g_s), s               | 0.0  | 5.2  | 0.0  | 19.6 | 0.0  | 8.8  | 0.0  | 7.5  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 18.8 | 0.0  | 26.7 | 0.0  | 28.0 | 0.0  | 17.0 |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 840  | 0    | 1021 | 0    | 760  | 0    | 844  |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 30.0 | 0.0  | 52.0 | 0.0  | 30.0 | 0.0  | 52.0 |
| Perm LT Serve Time (g_u), s         | 0.0  | 16.4 | 0.0  | 45.0 | 0.0  | 10.8 | 0.0  | 42.5 |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 5.2  | 0.0  | 19.6 | 0.0  | 8.8  | 0.0  | 7.5  |
| Time to First Blk (g_f), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Lane Grp Cap (c), veh/h             | 0    | 233  | 0    | 590  | 0    | 171  | 0    | 479  |
| V/C Ratio (X)                       | 0.00 | 0.24 | 0.00 | 0.53 | 0.00 | 0.44 | 0.00 | 0.24 |
| Avail Cap (c_a), veh/h              | 0    | 233  | 0    | 590  | 0    | 171  | 0    | 479  |
| Upstream Filter (I)                 | 0.00 | 1.00 | 0.00 | 0.89 | 0.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 32.2 | 0.0  | 16.2 | 0.0  | 38.7 | 0.0  | 14.5 |
| Incr Delay (d2), s/veh              | 0.0  | 0.5  | 0.0  | 3.0  | 0.0  | 1.8  | 0.0  | 1.2  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 32.7 | 0.0  | 19.1 | 0.0  | 40.5 | 0.0  | 15.7 |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 1.0  | 0.0  | 3.8  | 0.0  | 1.5  | 0.0  | 1.2  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.5  | 0.0  | 0.1  | 0.0  | 0.2  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 1.0  | 0.0  | 4.3  | 0.0  | 1.6  | 0.0  | 1.4  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.23 | 0.00 | 1.09 | 0.00 | 0.58 | 0.00 | 0.35 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 8    |
| Lane Assignment             |      | T    |      | T    |      | T    |      |      |
| Lanes in Grp                | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 453  | 0    | 373  | 0    | 346  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1870 | 0    | 1870 | 0    | 1870 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 19.2 | 0.0  | 9.5  | 0.0  | 13.6 | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 19.2 | 0.0  | 9.5  | 0.0  | 13.6 | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 623  | 0    | 1081 | 0    | 623  | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.73 | 0.00 | 0.35 | 0.00 | 0.55 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 623  | 0    | 1081 | 0    | 623  | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 1.00 | 0.00 | 0.89 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 26.4 | 0.0  | 10.0 | 0.0  | 24.5 | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 4.2  | 0.0  | 0.8  | 0.0  | 1.1  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 30.6 | 0.0  | 10.8 | 0.0  | 25.6 | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 7.6  | 0.0  | 3.0  | 0.0  | 5.4  | 0.0  | 0.0  |

Baseline

Synchro 9 Report



# HCM 7th Signalized Intersection Capacity Analysis

## 7: 11th Ave & Hanford Armona Rd

AM 2044  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.7  | 0.0  | 0.2  | 0.0  | 0.2  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 8.3  | 0.0  | 3.3  | 0.0  | 5.6  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.12 | 0.00 | 0.02 | 0.00 | 0.06 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 18   |
| Lane Assignment                  |      | R    |      | R    |      | R    |      | T+R  |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 1    |
| Grp Vol (v), veh/h               | 0    | 138  | 0    | 105  | 0    | 137  | 0    | 271  |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1460 | 0    | 1460 | 0    | 1460 | 0    | 1755 |
| Q Serve Time (g_s), s            | 0.0  | 6.3  | 0.0  | 2.9  | 0.0  | 6.2  | 0.0  | 7.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 6.3  | 0.0  | 2.9  | 0.0  | 6.2  | 0.0  | 7.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.37 |
| Lane Grp Cap (c), veh/h          | 0    | 487  | 0    | 844  | 0    | 487  | 0    | 1014 |
| V/C Ratio (X)                    | 0.00 | 0.28 | 0.00 | 0.12 | 0.00 | 0.28 | 0.00 | 0.27 |
| Avail Cap (c_a), veh/h           | 0    | 487  | 0    | 844  | 0    | 487  | 0    | 1014 |
| Upstream Filter (I)              | 0.00 | 1.00 | 0.00 | 0.89 | 0.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 22.1 | 0.0  | 8.6  | 0.0  | 22.1 | 0.0  | 9.6  |
| Incr Delay (d2), s/veh           | 0.0  | 0.3  | 0.0  | 0.3  | 0.0  | 0.3  | 0.0  | 0.6  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 22.4 | 0.0  | 8.9  | 0.0  | 22.4 | 0.0  | 10.3 |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 1.9  | 0.0  | 0.7  | 0.0  | 1.9  | 0.0  | 2.1  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  | 0.0  | 0.2  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 2.0  | 0.0  | 0.8  | 0.0  | 2.0  | 0.0  | 2.3  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.50 | 0.00 | 0.41 | 0.00 | 0.25 | 0.00 | 0.01 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 20.7 |
| HCM 7th LOS                  | C    |

# HCM 7th Signalized Intersection Capacity Analysis

## 8: 12th Ave & Hume Ave

AM 2044  
07/16/2024

|                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|---|---|---|
|                               |  |  |  |  |  |  |      |   |   |   |
| Movement                      | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |      |   |   |   |
| Lane Configurations           |  |  |  |                                                                                   |  |  |      |   |   |   |
| Traffic Volume (veh/h)        | 24                                                                                | 283                                                                               | 179                                                                               | 11                                                                                | 183                                                                               | 228                                                                               |      |   |   |   |
| Future Volume (veh/h)         | 24                                                                                | 283                                                                               | 179                                                                               | 11                                                                                | 183                                                                               | 228                                                                               |      |   |   |   |
| Number                        | 3                                                                                 | 18                                                                                | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 |      |   |   |   |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |      |   |   |   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |   |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |      |   |   |   |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |   |
| Work Zone On Approach         | No                                                                                |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |      |   |   |   |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              |      |   |   |   |
| Adj Flow Rate, veh/h          | 26                                                                                | 308                                                                               | 195                                                                               | 12                                                                                | 199                                                                               | 248                                                                               |      |   |   |   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |      |   |   |   |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |      |   |   |   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |      |   |   |   |
| Cap, veh/h                    | 391                                                                               | 348                                                                               | 1173                                                                              | 72                                                                                | 763                                                                               | 1258                                                                              |      |   |   |   |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                              | 2.00                                                                              |      |   |   |   |
| Prop Arrive On Green          | 0.24                                                                              | 0.24                                                                              | 0.67                                                                              | 0.67                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |   |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Ln Grp Delay, s/veh           | 26.6                                                                              | 42.6                                                                              | 0.0                                                                               | 5.7                                                                               | 0.9                                                                               | 0.3                                                                               |      |   |   |   |
| Ln Grp LOS                    | C                                                                                 | D                                                                                 |                                                                                   | A                                                                                 | A                                                                                 | A                                                                                 |      |   |   |   |
| Approach Vol, veh/h           | 334                                                                               |                                                                                   | 207                                                                               |                                                                                   |                                                                                   | 447                                                                               |      |   |   |   |
| Approach Delay, s/veh         | 41.3                                                                              |                                                                                   | 5.7                                                                               |                                                                                   |                                                                                   | 0.6                                                                               |      |   |   |   |
| Approach LOS                  | D                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |      |   |   |   |
| Timer:                        |                                                                                   | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6    | 7 | 8 |   |
| Assigned Phs                  |                                                                                   |                                                                                   | 2                                                                                 | 8                                                                                 |                                                                                   |                                                                                   | 6    |   |   |   |
| Case No                       |                                                                                   |                                                                                   | 8.0                                                                               | 9.0                                                                               |                                                                                   |                                                                                   | 6.0  |   |   |   |
| Phs Duration (G+Y+Rc), s      |                                                                                   |                                                                                   | 64.5                                                                              | 25.5                                                                              |                                                                                   |                                                                                   | 64.5 |   |   |   |
| Change Period (Y+Rc), s       |                                                                                   |                                                                                   | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                   | 4.0  |   |   |   |
| Max Green (Gmax), s           |                                                                                   |                                                                                   | 47.0                                                                              | 35.0                                                                              |                                                                                   |                                                                                   | 47.0 |   |   |   |
| Max Allow Headway (MAH), s    |                                                                                   |                                                                                   | 4.0                                                                               | 4.3                                                                               |                                                                                   |                                                                                   | 4.4  |   |   |   |
| Max Q Clear (g_c+I1), s       |                                                                                   |                                                                                   | 5.7                                                                               | 20.3                                                                              |                                                                                   |                                                                                   | 7.1  |   |   |   |
| Green Ext Time (g_e), s       |                                                                                   |                                                                                   | 0.7                                                                               | 1.1                                                                               |                                                                                   |                                                                                   | 1.9  |   |   |   |
| Prob of Phs Call (p_c)        |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 1.00 |   |   |   |
| Prob of Max Out (p_x)         |                                                                                   |                                                                                   | 0.00                                                                              | 0.01                                                                              |                                                                                   |                                                                                   | 0.00 |   |   |   |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 5                                                                                 | 3                                                                                 |                                                                                   |                                                                                   | 1    |   |   |   |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 0                                                                                 | 1641                                                                              |                                                                                   |                                                                                   | 1082 |   |   |   |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 2                                                                                 | 8                                                                                 |                                                                                   |                                                                                   | 6    |   |   |   |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 1744                                                                              | 0                                                                                 |                                                                                   |                                                                                   | 1870 |   |   |   |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 12                                                                                | 18                                                                                |                                                                                   |                                                                                   | 16   |   |   |   |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 107                                                                               | 1460                                                                              |                                                                                   |                                                                                   | 0    |   |   |   |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 0                                                                                 | 5                                                                                 | 3                                                                                 | 0                                                                                 | 0    | 1 | 0 | 0 |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 8: 12th Ave & Hume Ave

AM 2044  
07/16/2024

|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     | L    |      |      |      | L    |      |      |      |
| Lanes in Grp                        | 0    | 0    | 1    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 26   | 0    | 0    | 199  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 1641 | 0    | 0    | 1082 | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 1.1  | 0.0  | 0.0  | 1.4  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 1.1  | 0.0  | 0.0  | 5.1  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 1641 | 0    | 0    | 1082 | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 60.5 | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 56.8 | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 1.4  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 60.5 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 391  | 0    | 0    | 763  | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.07 | 0.00 | 0.00 | 0.26 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 638  | 0    | 0    | 763  | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.88 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 26.5 | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  | 0.7  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 26.6 | 0.0  | 0.0  | 0.9  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.4  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.07 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 8    | 0    | 0    | 6    | 0    | 0    |
| Lane Assignment             | T    |      |      |      |      |      |      |      |
| Lanes in Grp                | 0    | 0    | 0    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 0    | 0    | 0    | 0    | 248  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 0    | 0    | 0    | 0    | 1870 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 0    | 0    | 0    | 0    | 1258 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.20 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 0    | 0    | 0    | 0    | 1258 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.88 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 8: 12th Ave & Hume Ave

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07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 18   | 0    | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      |      |      |      |      |
| Lanes in Grp                     | 0    | 1    | 1    | 0    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 207  | 308  | 0    | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1851 | 1460 | 0    | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 3.7  | 18.3 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 3.7  | 18.3 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.06 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1245 | 348  | 0    | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.17 | 0.88 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1245 | 568  | 0    | 0    | 0    | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 5.4  | 33.1 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.3  | 9.5  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 5.7  | 42.6 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 1.0  | 5.9  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.1  | 0.9  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 1.1  | 6.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.02 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 15.4 |
| HCM 7th LOS                  | B    |



# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

AM 2044+Project  
07/16/2024

| Movement                      | EBL | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|-------------------------------|-----|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations           |     |      |      | ↰    |      | ↰    | ↰    | ↰    |      |      | ↰    | ↰    |
| Traffic Volume (veh/h)        | 0   | 0    | 0    | 77   | 0    | 556  | 43   | 1147 | 0    | 0    | 740  | 401  |
| Future Volume (veh/h)         | 0   | 0    | 0    | 77   | 0    | 556  | 43   | 1147 | 0    | 0    | 740  | 401  |
| Number                        |     |      |      | 3    | 8    | 18   | 5    | 2    | 12   | 1    | 6    | 16   |
| Initial Q, veh                |     |      |      | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Lane Width Adj.               |     |      |      | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped-Bike Adj (A_pbT)          |     |      |      | 1.00 |      | 1.00 | 1.00 |      | 1.00 | 1.00 |      | 1.00 |
| Parking Bus Adj               |     |      |      | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach         |     |      |      | No   |      |      |      | No   |      |      |      | No   |
| Lanes Open During Work Zone   |     |      |      |      |      |      |      |      |      |      |      |      |
| Adj Sat Flow, veh/h/ln        |     |      |      | 1723 | 0    | 1723 | 1723 | 1870 | 0    | 0    | 1870 | 1723 |
| Adj Flow Rate, veh/h          |     |      |      | 84   | 0    | 604  | 47   | 1247 | 0    | 0    | 804  | 436  |
| Peak Hour Factor              |     |      |      | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, %          |     |      |      | 2    | 0    | 2    | 2    | 2    | 0    | 0    | 2    | 2    |
| Opposing Right Turn Influence |     |      |      | Yes  |      |      | Yes  |      |      | No   |      |      |
| Cap, veh/h                    |     |      |      | 864  | 0    | 698  | 57   | 2280 | 0    | 0    | 2873 | 822  |
| HCM Platoon Ratio             |     |      |      | 1.00 | 1.00 | 1.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Prop Arrive On Green          |     |      |      | 0.27 | 0.00 | 0.27 | 0.07 | 1.00 | 0.00 | 0.00 | 0.56 | 0.56 |
| Unsig. Movement Delay         |     |      |      |      |      |      |      |      |      |      |      |      |
| Ln Grp Delay, s/veh           |     |      |      | 24.9 | 0.0  | 39.1 | 62.2 | 0.8  | 0.0  | 0.0  | 10.6 | 14.9 |
| Ln Grp LOS                    |     |      |      | C    |      | D    | E    | A    |      |      | B    | B    |
| Approach Vol, veh/h           |     |      |      | 688  |      |      |      | 1294 |      |      |      | 1240 |
| Approach Delay, s/veh         |     |      |      | 37.4 |      |      |      | 3.0  |      |      |      | 12.1 |
| Approach LOS                  |     |      |      | D    |      |      |      | A    |      |      |      | B    |
| Timer:                        | 1   | 2    | 3    | 4    | 5    | 6    | 7    | 8    |      |      |      |      |
| Assigned Phs                  |     | 2    | 8    |      | 5    | 6    |      |      |      |      |      |      |
| Case No                       |     | 4.0  | 9.0  |      | 2.0  | 7.0  |      |      |      |      |      |      |
| Phs Duration (G+Y+Rc), s      |     | 62.4 | 28.6 |      | 7.2  | 55.2 |      |      |      |      |      |      |
| Change Period (Y+Rc), s       |     | 5.5  | 4.0  |      | 4.0  | 5.5  |      |      |      |      |      |      |
| Max Green (Gmax), s           |     | 50.5 | 31.0 |      | 7.0  | 39.5 |      |      |      |      |      |      |
| Max Allow Headway (MAH), s    |     | 4.0  | 4.3  |      | 4.1  | 4.1  |      |      |      |      |      |      |
| Max Q Clear (g_c+I1), s       |     | 2.0  | 22.4 |      | 4.6  | 18.9 |      |      |      |      |      |      |
| Green Ext Time (g_e), s       |     | 6.9  | 2.2  |      | 0.0  | 5.6  |      |      |      |      |      |      |
| Prob of Phs Call (p_c)        |     | 1.00 | 1.00 |      | 0.70 | 1.00 |      |      |      |      |      |      |
| Prob of Max Out (p_x)         |     | 0.00 | 0.28 |      | 1.00 | 0.08 |      |      |      |      |      |      |
| Left-Turn Movement Data       |     |      |      |      |      |      |      |      |      |      |      |      |
| Assigned Mvmt                 |     |      |      | 3    |      | 5    | 1    |      |      |      |      |      |
| Mvmt Sat Flow, veh/h          |     |      |      | 3183 |      | 1641 | 0    |      |      |      |      |      |
| Through Movement Data         |     |      |      |      |      |      |      |      |      |      |      |      |
| Assigned Mvmt                 |     | 2    | 8    |      |      | 6    |      |      |      |      |      |      |
| Mvmt Sat Flow, veh/h          |     | 3647 | 0    |      |      | 5274 |      |      |      |      |      |      |
| Right-Turn Movement Data      |     |      |      |      |      |      |      |      |      |      |      |      |
| Assigned Mvmt                 |     | 12   | 18   |      |      | 16   |      |      |      |      |      |      |
| Mvmt Sat Flow, veh/h          |     | 0    | 2569 |      |      | 1460 |      |      |      |      |      |      |
| Left Lane Group Data          |     |      |      |      |      |      |      |      |      |      |      |      |
| Assigned Mvmt                 | 0   | 0    | 3    | 0    | 5    | 1    | 0    | 0    |      |      |      |      |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

AM 2044+Project  
07/16/2024

|                                     |      |      |      |          |      |      |      |      |
|-------------------------------------|------|------|------|----------|------|------|------|------|
| Lane Assignment                     | L    |      |      | L (Prot) |      |      |      |      |
| Lanes in Grp                        | 0    | 0    | 2    | 0        | 1    | 0    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 84   | 0        | 47   | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 1591 | 0        | 1641 | 0    | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 1.8  | 0.0      | 2.6  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 1.8  | 0.0      | 2.6  | 0.0  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 1591 | 0        | 0    | 0    | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0        | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 51.2 | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 1.00 | 0.00     | 1.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 864  | 0        | 57   | 0    | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.10 | 0.00     | 0.82 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 1088 | 0        | 126  | 0    | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 1.00 | 0.00     | 0.83 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 24.8 | 0.0      | 42.0 | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.0  | 0.0      | 20.2 | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 24.9 | 0.0      | 62.2 | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.6  | 0.0      | 0.9  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0      | 0.3  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 0.00 | 1.00 | 0.00     | 1.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.6  | 0.0      | 1.3  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.06 | 0.00     | 0.08 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0        | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0      | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 8    | 0    | 0    | 6    | 0    | 0    |
| Lane Assignment             | T    |      |      | T    |      |      |      |      |
| Lanes in Grp                | 0    | 2    | 0    | 0    | 0    | 3    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 1247 | 0    | 0    | 0    | 804  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1777 | 0    | 0    | 0    | 1702 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 7.4  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 7.4  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 2280 | 0    | 0    | 0    | 2873 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.55 | 0.00 | 0.00 | 0.00 | 0.28 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 2280 | 0    | 0    | 0    | 2873 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.83 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 10.3 | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.8  | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.8  | 0.0  | 0.0  | 0.0  | 10.6 | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 2.2  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 1: 12th Ave & SR 198 WB Ramps

AM 2044+Project  
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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 2.3  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 18   | 0    | 0    | 16   | 0    | 0    |
| Lane Assignment                  | R    |      |      | R    |      |      |      |      |
| Lanes in Grp                     | 0    | 0    | 2    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 0    | 604  | 0    | 0    | 436  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 0    | 1285 | 0    | 0    | 1460 | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 0.0  | 20.4 | 0.0  | 0.0  | 16.9 | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 0.0  | 20.4 | 0.0  | 0.0  | 16.9 | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 0    | 698  | 0    | 0    | 822  | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.00 | 0.87 | 0.00 | 0.00 | 0.53 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 0    | 878  | 0    | 0    | 822  | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 0.0  | 31.6 | 0.0  | 0.0  | 12.4 | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.0  | 7.6  | 0.0  | 0.0  | 2.4  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 0.0  | 39.1 | 0.0  | 0.0  | 14.9 | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.0  | 5.7  | 0.0  | 0.0  | 4.4  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.0  | 0.7  | 0.0  | 0.0  | 0.6  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.0  | 6.4  | 0.0  | 0.0  | 4.9  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.00 | 0.39 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 13.8 |
| HCM 7th LOS                  | B    |



# HCM 7th Signalized Intersection Capacity Analysis

## 2: 12th Ave & SR 198 WB EB Ramps

AM 2044+Project

07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |  |                                                                                     |                                                                                     |  |  |
| Traffic Volume (veh/h)        | 424                                                                               | 0                                                                                 | 25                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 848                                                                                 | 206                                                                                 | 0                                                                                   | 447                                                                                 | 0                                                                                   |
| Future Volume (veh/h)         | 424                                                                               | 0                                                                                 | 25                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 848                                                                                 | 206                                                                                 | 0                                                                                   | 447                                                                                 | 0                                                                                   |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                |                                                                                   |                                                                                   |                                                                                   | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 0                                                                                 | 1723                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1870                                                                                | 1723                                                                                | 0                                                                                   | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 461                                                                               | 0                                                                                 | 27                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 922                                                                                 | 224                                                                                 | 0                                                                                   | 486                                                                                 | 0                                                                                   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 0                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Cap, veh/h                    | 570                                                                               | 0                                                                                 | 261                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2082                                                                                | 505                                                                                 | 0                                                                                   | 2609                                                                                | 1072                                                                                |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.33                                                                                | 0.33                                                                                |
| Prop Arrive On Green          | 0.18                                                                              | 0.00                                                                              | 0.18                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 0.73                                                                                | 0.72                                                                                | 0.00                                                                                | 0.24                                                                                | 0.00                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 39.2                                                                              | 0.0                                                                               | 31.4                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 5.5                                                                                 | 5.7                                                                                 | 0.0                                                                                 | 13.1                                                                                | 0.0                                                                                 |
| Ln Grp LOS                    | D                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     | A                                                                                   | A                                                                                   |                                                                                     | B                                                                                   |                                                                                     |
| Approach Vol, veh/h           | 488                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 1146                                                                                |                                                                                     |                                                                                     | 486                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh         | 38.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 5.6                                                                                 |                                                                                     |                                                                                     | 13.1                                                                                |                                                                                     |                                                                                     |
| Approach LOS                  | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |
| Timer:                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       | 8.0                                                                               |                                                                                   | 9.0                                                                               |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 70.8                                                                              |                                                                                   | 20.2                                                                              |                                                                                   | 70.8                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | 5.5                                                                               |                                                                                   | 4.0                                                                               |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           | 56.5                                                                              |                                                                                   | 25.0                                                                              |                                                                                   | 56.5                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    | 4.1                                                                               |                                                                                   | 4.1                                                                               |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       | 13.9                                                                              |                                                                                   | 14.7                                                                              |                                                                                   | 11.9                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       | 5.2                                                                               |                                                                                   | 1.5                                                                               |                                                                                   | 2.1                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         | 0.00                                                                              |                                                                                   | 0.07                                                                              |                                                                                   | 0.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 5                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 1                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 0                                                                                 |                                                                                   | 3183                                                                              |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 2929                                                                              |                                                                                   | 0                                                                                 |                                                                                   | 3647                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 12                                                                                |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 688                                                                               |                                                                                   | 1460                                                                              |                                                                                   | 1460                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 2: 12th Ave & SR 198 WB EB Ramps

AM 2044+Project  
07/16/2024

|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     | L    |      |      |      |      |      |      |      |
| Lanes in Grp                        | 0    | 0    | 0    | 2    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 0    | 461  | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 0    | 1591 | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.0  | 12.7 | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.0  | 12.7 | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 0    | 1591 | 0    | 0    | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 66.8 | 0.0  | 0.0  | 0.0  | 66.8 | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 0    | 570  | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.00 | 0.81 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 0    | 878  | 0    | 0    | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 0.0  | 35.9 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.0  | 3.3  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 0.0  | 39.2 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.0  | 4.5  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.0  | 4.8  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.00 | 0.24 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 0    |
| Lane Assignment             | T    |      |      |      | T    |      |      |      |
| Lanes in Grp                | 0    | 1    | 0    | 0    | 0    | 2    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 577  | 0    | 0    | 0    | 486  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1777 | 0    | 0    | 0    | 1777 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 11.6 | 0.0  | 0.0  | 0.0  | 9.9  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 11.6 | 0.0  | 0.0  | 0.0  | 9.9  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 1305 | 0    | 0    | 0    | 2609 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.44 | 0.00 | 0.00 | 0.00 | 0.19 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 1305 | 0    | 0    | 0    | 2609 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.67 | 0.00 | 0.00 | 0.00 | 0.97 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 4.8  | 0.0  | 0.0  | 0.0  | 12.9 | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.7  | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 5.5  | 0.0  | 0.0  | 0.0  | 13.1 | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 2.3  | 0.0  | 0.0  | 0.0  | 3.1  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

## HCM 7th Signalized Intersection Capacity Analysis

### 2: 12th Ave & SR 198 WB EB Ramps

AM 2044+Project  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.3  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 2.6  | 0.0  | 0.0  | 0.0  | 3.1  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.05 | 0.00 | 0.00 | 0.00 | 0.14 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

#### Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      | R    |      |      |      |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 569  | 0    | 27   | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1747 | 0    | 1460 | 0    | 1460 | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 11.9 | 0.0  | 1.4  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 11.9 | 0.0  | 1.4  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.39 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1282 | 0    | 261  | 0    | 1072 | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.44 | 0.00 | 0.10 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1282 | 0    | 403  | 0    | 1072 | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 0.67 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 4.9  | 0.0  | 31.2 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.7  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 5.7  | 0.0  | 31.4 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 2.4  | 0.0  | 0.5  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 2.6  | 0.0  | 0.5  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.05 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

#### Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 14.9 |
| HCM 7th LOS                  | B    |

| Intersection                |         |        |         |        |         |         |        |
|-----------------------------|---------|--------|---------|--------|---------|---------|--------|
| Intersection Delay, s/veh   | 8.5     |        |         |        |         |         |        |
| Intersection LOS            | A       |        |         |        |         |         |        |
| Approach                    | EB      |        | WB      |        | NB      |         | SB     |
| Entry Lanes                 | 1       |        | 1       |        | 1       |         | 1      |
| Conflicting Circle Lanes    | 1       |        | 1       |        | 1       |         | 1      |
| Adj Approach Flow, veh/h    | 540     |        | 713     |        | 0       |         | 344    |
| Demand Flow Rate, veh/h     | 551     |        | 727     |        | 0       |         | 351    |
| Vehicles Circulating, veh/h | 595     |        | 157     |        | 427     |         | 613    |
| Vehicles Exiting, veh/h     | 365     |        | 270     |        | 529     |         | 157    |
| Ped Vol Crossing Leg, #/h   | 0       |        | 0       |        | 0       |         | 0      |
| Ped Cap Adj                 | 1.000   |        | 1.000   |        | 1.000   |         | 1.000  |
| Approach Delay, s/veh       | 7.6     |        | 7.7     |        | 0.0     |         | 11.6   |
| Approach LOS                | A       |        | A       |        | -       |         | B      |
| Lane                        | Left    | Bypass | Left    | Bypass | Left    | Left    | Bypass |
| Designated Moves            | LT      | R      | LT      | R      | LTR     | LT      | R      |
| Assumed Moves               | LT      |        | LT      |        | LTR     | LT      |        |
| RT Channelized              |         | Free   |         | Free   |         |         | Free   |
| Lane Util                   | 1.000   |        | 1.000   |        | 1.000   | 1.000   |        |
| Follow-Up Headway, s        | 2.609   |        | 2.609   |        | 2.609   | 2.609   |        |
| Critical Headway, s         | 4.976   |        | 4.976   |        | 4.976   | 4.976   |        |
| A (Intercept)               | 1380    |        | 1380    |        | 1380    | 1380    |        |
| B (Slope)                   | 1.02e-3 |        | 1.02e-3 |        | 1.02e-3 | 1.02e-3 |        |
| Entry Flow, veh/h           | 360     | 191    | 613     | 114    | 0       | 348     | 3      |
| Cap Entry Lane, veh/h       | 752     | 1938   | 1176    | 1938   | 893     | 738     | 1938   |
| Entry HV Adj Factor         | 0.981   | 0.980  | 0.980   | 0.980  | 1.000   | 0.981   | 0.980  |
| Flow Entry, veh/h           | 353     | 187    | 601     | 112    | 0       | 341     | 3      |
| Cap Entry, veh/h            | 738     | 1900   | 1152    | 1900   | 893     | 725     | 1900   |
| V/C Ratio                   | 0.479   | 0.098  | 0.521   | 0.059  | 0.000   | 0.471   | 0.002  |
| Control Delay, s/veh        | 11.7    | 0.0    | 9.1     | 0.0    | 4.0     | 11.7    | 0.0    |
| LOS                         | B       | A      | A       | A      | A       | B       | A      |
| 95th %tile Queue, veh       | 3       | 0      | 3       | 0      | 0       | 3       | 0      |

# HCM 7th Signalized Intersection Capacity Analysis

## 4: SR 198 EB Ramps & Hanford Armona Rd

AM 2044+Project

07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)        | 137                                                                               | 5                                                                                 | 139                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 433                                                                                 | 43                                                                                  | 171                                                                                 | 197                                                                                 | 0                                                                                   |
| Future Volume (veh/h)         | 137                                                                               | 5                                                                                 | 139                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 433                                                                                 | 43                                                                                  | 171                                                                                 | 197                                                                                 | 0                                                                                   |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                |                                                                                   |                                                                                   |                                                                                   | 5                                                                                  | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                 |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 0                                                                                   |
| Adj Flow Rate, veh/h          | 149                                                                               | 5                                                                                 | 151                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 471                                                                                 | 47                                                                                  | 186                                                                                 | 214                                                                                 | 0                                                                                   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | No                                                                                  |                                                                                     |                                                                                     |                                                                                     | Yes                                                                                 |
| Cap, veh/h                    | 302                                                                               | 0                                                                                 | 269                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 879                                                                                 | 88                                                                                  | 385                                                                                 | 377                                                                                 | 0                                                                                   |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Prop Arrive On Green          | 0.18                                                                              | 0.18                                                                              | 0.18                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.53                                                                                | 0.47                                                                                | 0.53                                                                                | 0.53                                                                                | 0.00                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 11.3                                                                              | 0.0                                                                               | 12.1                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 0.0                                                                                 | 4.8                                                                                 | 5.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Ln Grp LOS                    | B                                                                                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | A                                                                                   | A                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h           | 300                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 518                                                                                |                                                                                     |                                                                                     | 400                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh         | 11.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 4.8                                                                                |                                                                                     |                                                                                     | 5.5                                                                                 |                                                                                     |                                                                                     |
| Approach LOS                  | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | A                                                                                  |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Timer:                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       | 8.0                                                                               |                                                                                   | 9.0                                                                               |                                                                                   | 8.0                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 18.5                                                                              |                                                                                   | 9.1                                                                               |                                                                                   | 18.5                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | 5.5                                                                               |                                                                                   | 4.1                                                                               |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           | 61.5                                                                              |                                                                                   | 18.9                                                                              |                                                                                   | 61.5                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    | 4.0                                                                               |                                                                                   | 4.2                                                                               |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       | 7.2                                                                               |                                                                                   | 4.6                                                                               |                                                                                   | 10.8                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       | 2.0                                                                               |                                                                                   | 0.9                                                                               |                                                                                   | 2.2                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        | 1.00                                                                              |                                                                                   | 0.90                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         | 0.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 5                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 1                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 0                                                                                 |                                                                                   | 1641                                                                              |                                                                                   | 368                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 1673                                                                              |                                                                                   | 0                                                                                 |                                                                                   | 718                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 12                                                                                |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 167                                                                               |                                                                                   | 1460                                                                              |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                  | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 4: SR 198 EB Ramps & Hanford Armona Rd

AM 2044+Project  
07/16/2024

|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     |      |      |      | L    |      | L+T  |      |      |
| Lanes in Grp                        | 0    | 0    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 0    | 149  | 0    | 400  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 0    | 1641 | 0    | 1087 | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 0.0  | 2.2  | 0.0  | 3.6  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 0.0  | 2.2  | 0.0  | 8.8  | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 0    | 1641 | 0    | 897  | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 14.5 | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 9.3  | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 3.6  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 14.5 | 0.0  | 0.0  | 0.0  | 2.3  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 2.3  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.46 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 0    | 302  | 0    | 762  | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.00 | 0.49 | 0.00 | 0.52 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 0    | 1133 | 0    | 2934 | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 0.0  | 10.1 | 0.0  | 5.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.0  | 1.2  | 0.0  | 0.6  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 0.0  | 11.3 | 0.0  | 5.5  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.0  | 0.4  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.0  | 0.5  | 0.0  | 0.1  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.00 | 0.03 | 0.00 | 0.02 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 0    |
| Lane Assignment             |      |      |      |      |      |      |      |      |
| Lanes in Grp                | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

Baseline

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|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      |      |      |      |      |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 518  | 0    | 151  | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1840 | 0    | 1460 | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 5.2  | 0.0  | 2.6  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 5.2  | 0.0  | 2.6  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.09 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 967  | 0    | 269  | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.54 | 0.00 | 0.56 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 4214 | 0    | 1008 | 0    | 0    | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 4.4  | 0.0  | 10.2 | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.5  | 0.0  | 1.8  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 4.8  | 0.0  | 12.1 | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 0.0  | 0.0  | 0.4  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.1  | 0.0  | 0.1  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 0.1  | 0.0  | 0.5  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.01 | 0.00 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |     |
|------------------------------|-----|
| HCM 7th Control Delay, s/veh | 6.8 |
| HCM 7th LOS                  | A   |

| Intersection              |        |      |      |        |       |      |        |       |       |        |       |       |
|---------------------------|--------|------|------|--------|-------|------|--------|-------|-------|--------|-------|-------|
| Int Delay, s/veh          | 3.3    |      |      |        |       |      |        |       |       |        |       |       |
| Movement                  | EBL    | EBT  | EBR  | WBL    | WBT   | WBR  | NBL    | NBT   | NBR   | SBL    | SBT   | SBR   |
| Lane Configurations       |        | ↕    |      |        | ↕     |      |        | ↕     |       |        | ↕     |       |
| Traffic Vol, veh/h        | 0      | 494  | 56   | 28     | 429   | 0    | 72     | 0     | 25    | 0      | 0     | 0     |
| Future Vol, veh/h         | 0      | 494  | 56   | 28     | 429   | 0    | 72     | 0     | 25    | 0      | 0     | 0     |
| Conflicting Peds, #/hr    | 0      | 0    | 0    | 0      | 0     | 0    | 0      | 0     | 0     | 0      | 0     | 0     |
| Sign Control              | Free   | Free | Free | Free   | Free  | Free | Stop   | Stop  | Stop  | Stop   | Stop  | Stop  |
| RT Channelized            | -      | -    | None | -      | -     | None | -      | -     | None  | -      | -     | None  |
| Storage Length            | -      | -    | -    | -      | -     | -    | -      | -     | -     | -      | -     | -     |
| Veh in Median Storage, #  | -      | 0    | -    | -      | 0     | -    | -      | 0     | -     | -      | 0     | -     |
| Grade, %                  | -      | 0    | -    | -      | 0     | -    | -      | 0     | -     | -      | 0     | -     |
| Peak Hour Factor          | 92     | 92   | 92   | 92     | 92    | 92   | 92     | 92    | 92    | 92     | 92    | 92    |
| Heavy Vehicles, %         | 2      | 2    | 2    | 2      | 2     | 2    | 2      | 2     | 2     | 2      | 2     | 2     |
| Mvmt Flow                 | 0      | 537  | 61   | 30     | 466   | 0    | 78     | 0     | 27    | 0      | 0     | 0     |
| Major/Minor               | Major1 |      |      | Major2 |       |      | Minor1 |       |       | Minor2 |       |       |
| Conflicting Flow All      | 466    | 0    | 0    | 598    | 0     | 0    | 1095   | 1095  | 567   | 1064   | 1125  | 466   |
| Stage 1                   | -      | -    | -    | -      | -     | -    | 567    | 567   | -     | 527    | 527   | -     |
| Stage 2                   | -      | -    | -    | -      | -     | -    | 527    | 527   | -     | 537    | 598   | -     |
| Critical Hdwy             | 4.12   | -    | -    | 4.12   | -     | -    | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1       | -      | -    | -    | -      | -     | -    | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2       | -      | -    | -    | -      | -     | -    | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy            | 2.218  | -    | -    | 2.218  | -     | -    | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver        | 1095   | -    | -    | 979    | -     | -    | 191    | 214   | 523   | 201    | 205   | 596   |
| Stage 1                   | -      | -    | -    | -      | -     | -    | 508    | 507   | -     | 534    | 528   | -     |
| Stage 2                   | -      | -    | -    | -      | -     | -    | 534    | 528   | -     | 528    | 491   | -     |
| Platoon blocked, %        | -      | -    | -    | -      | -     | -    | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver        | 1095   | -    | -    | 979    | -     | -    | 183    | 205   | 523   | 182    | 196   | 596   |
| Mov Cap-2 Maneuver        | -      | -    | -    | -      | -     | -    | 183    | 205   | -     | 182    | 196   | -     |
| Stage 1                   | -      | -    | -    | -      | -     | -    | 508    | 507   | -     | 512    | 506   | -     |
| Stage 2                   | -      | -    | -    | -      | -     | -    | 512    | 506   | -     | 500    | 491   | -     |
| Approach                  | EB     |      |      | WB     |       |      | NB     |       |       | SB     |       |       |
| HCM Control Delay, s/v    | 0      |      |      | 0.54   |       |      | 35.55  |       |       | 0      |       |       |
| HCM LOS                   |        |      |      |        |       |      | E      |       |       | A      |       |       |
| Minor Lane/Major Mvmt     | NBLn1  | EBL  | EBT  | EBR    | WBL   | WBT  | WBR    | SBLn1 |       |        |       |       |
| Capacity (veh/h)          | 220    | 1095 | -    | -      | 110   | -    | -      | -     |       |        |       |       |
| HCM Lane V/C Ratio        | 0.479  | -    | -    | -      | 0.031 | -    | -      | -     |       |        |       |       |
| HCM Control Delay (s/veh) | 35.5   | 0    | -    | -      | 8.8   | 0    | -      | 0     |       |        |       |       |
| HCM Lane LOS              | E      | A    | -    | -      | A     | A    | -      | A     |       |        |       |       |
| HCM 95th %tile Q(veh)     | 2.4    | 0    | -    | -      | 0.1   | -    | -      | -     |       |        |       |       |



# HCM 7th Signalized Intersection Capacity Analysis

## 6: 12th Ave & Hanford Armona Rd

AM 2044+Project  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |  |  |  |  |  |   |  |  |  |  |  |
| Traffic Volume (veh/h)        | 218                                                                               | 336                                                                               | 79                                                                                | 40                                                                                | 316                                                                               | 286                                                                               | 118                                                                                 | 482                                                                                 | 46                                                                                  | 141                                                                                 | 255                                                                                 | 88                                                                                  |
| Future Volume (veh/h)         | 218                                                                               | 336                                                                               | 79                                                                                | 40                                                                                | 316                                                                               | 286                                                                               | 118                                                                                 | 482                                                                                 | 46                                                                                  | 141                                                                                 | 255                                                                                 | 88                                                                                  |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                                | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 237                                                                               | 365                                                                               | 86                                                                                | 43                                                                                | 343                                                                               | 311                                                                               | 128                                                                                 | 524                                                                                 | 50                                                                                  | 153                                                                                 | 277                                                                                 | 96                                                                                  |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Cap, veh/h                    | 293                                                                               | 833                                                                               | 650                                                                               | 79                                                                                | 589                                                                               | 460                                                                               | 289                                                                                 | 664                                                                                 | 63                                                                                  | 207                                                                                 | 397                                                                                 | 135                                                                                 |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Prop Arrive On Green          | 0.18                                                                              | 0.45                                                                              | 0.45                                                                              | 0.05                                                                              | 0.31                                                                              | 0.31                                                                              | 0.18                                                                                | 0.20                                                                                | 0.19                                                                                | 0.13                                                                                | 0.15                                                                                | 0.14                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 49.3                                                                              | 18.9                                                                              | 3.6                                                                               | 47.4                                                                              | 29.9                                                                              | 18.4                                                                              | 34.0                                                                                | 40.6                                                                                | 40.8                                                                                | 50.5                                                                                | 39.2                                                                                | 40.2                                                                                |
| Ln Grp LOS                    | D                                                                                 | B                                                                                 | A                                                                                 | D                                                                                 | C                                                                                 | B                                                                                 | C                                                                                   | D                                                                                   | D                                                                                   | D                                                                                   | D                                                                                   | D                                                                                   |
| Approach Vol, veh/h           |                                                                                   | 688                                                                               |                                                                                   |                                                                                   | 697                                                                               |                                                                                   |                                                                                     | 702                                                                                 |                                                                                     |                                                                                     | 526                                                                                 |                                                                                     |
| Approach Delay, s/veh         |                                                                                   | 27.4                                                                              |                                                                                   |                                                                                   | 25.9                                                                              |                                                                                   |                                                                                     | 39.5                                                                                |                                                                                     |                                                                                     | 42.8                                                                                |                                                                                     |
| Approach LOS                  |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer:                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 2                                                                                 | 1                                                                                 | 3                                                                                 | 4                                                                                 | 6                                                                                 | 5                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Case No                       | 4.0                                                                               | 2.0                                                                               | 2.0                                                                               | 3.0                                                                               | 4.0                                                                               | 2.0                                                                               | 2.0                                                                                 | 3.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 22.2                                                                              | 15.4                                                                              | 8.3                                                                               | 44.1                                                                              | 17.7                                                                              | 19.9                                                                              | 20.1                                                                                | 32.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | * 5.5                                                                             | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                                 | 5.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           | * 21                                                                              | 10.0                                                                              | 5.4                                                                               | 33.3                                                                              | 20.5                                                                              | 8.8                                                                               | 15.8                                                                                | 22.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    | 4.0                                                                               | 4.1                                                                               | 4.1                                                                               | 4.1                                                                               | 4.1                                                                               | 4.1                                                                               | 4.1                                                                                 | 4.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       | 15.7                                                                              | 10.1                                                                              | 4.3                                                                               | 14.1                                                                              | 11.3                                                                              | 8.3                                                                               | 14.5                                                                                | 15.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       | 1.0                                                                               | 0.0                                                                               | 0.0                                                                               | 1.5                                                                               | 0.9                                                                               | 0.0                                                                               | 0.1                                                                                 | 1.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        | 1.00                                                                              | 0.98                                                                              | 0.66                                                                              | 1.00                                                                              | 1.00                                                                              | 0.96                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         | 0.68                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.08                                                                              | 1.00                                                                              | 1.00                                                                                | 0.00                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 1                                                                                 | 3                                                                                 |                                                                                   |                                                                                   | 5                                                                                 | 7                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 1641                                                                              | 1641                                                                              |                                                                                   |                                                                                   | 1641                                                                              | 1641                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 3279                                                                              |                                                                                   |                                                                                   | 1870                                                                              | 2605                                                                              |                                                                                     | 1870                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 12                                                                                |                                                                                   |                                                                                   | 14                                                                                | 16                                                                                |                                                                                     | 18                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          |                                                                                   | 312                                                                               |                                                                                   |                                                                                   | 1460                                                                              | 883                                                                               |                                                                                     | 1460                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 |                                                                                   | 0                                                                                 | 1                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 5                                                                                   | 7                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 6: 12th Ave & Hanford Armona Rd

AM 2044+Project  
07/16/2024

| Lane Assignment                     | L (Prot) |      | L (Prot) |      | L (Prot) |      | L (Prot) |      |
|-------------------------------------|----------|------|----------|------|----------|------|----------|------|
| Lanes in Grp                        | 0        | 1    | 1        | 0    | 0        | 1    | 1        | 0    |
| Grp Vol (v), veh/h                  | 0        | 153  | 43       | 0    | 0        | 128  | 237      | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0        | 1641 | 1641     | 0    | 0        | 1641 | 1641     | 0    |
| Q Serve Time (g_s), s               | 0.0      | 8.1  | 2.3      | 0.0  | 0.0      | 6.3  | 12.5     | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0      | 8.1  | 2.3      | 0.0  | 0.0      | 6.3  | 12.5     | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0        | 0    | 0        | 0    | 0        | 0    | 0        | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0        | 0    | 0        | 0    | 0        | 0    | 0        | 0    |
| Perm LT Eff Green (g_p), s          | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Time to First Blk (g_f), s          | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00     | 1.00 | 1.00     | 0.00 | 0.00     | 1.00 | 1.00     | 0.00 |
| Lane Grp Cap (c), veh/h             | 0        | 207  | 79       | 0    | 0        | 289  | 293      | 0    |
| V/C Ratio (X)                       | 0.00     | 0.74 | 0.54     | 0.00 | 0.00     | 0.44 | 0.81     | 0.00 |
| Avail Cap (c_a), veh/h              | 0        | 210  | 126      | 0    | 0        | 289  | 315      | 0    |
| Upstream Filter (I)                 | 0.00     | 0.99 | 0.97     | 0.00 | 0.00     | 0.86 | 1.00     | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0      | 37.9 | 41.9     | 0.0  | 0.0      | 33.1 | 35.5     | 0.0  |
| Incr Delay (d2), s/veh              | 0.0      | 12.6 | 5.5      | 0.0  | 0.0      | 0.9  | 13.8     | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Control Delay (d), s/veh            | 0.0      | 50.5 | 47.4     | 0.0  | 0.0      | 34.0 | 49.3     | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0      | 3.0  | 0.9      | 0.0  | 0.0      | 2.3  | 4.6      | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0      | 0.7  | 0.1      | 0.0  | 0.0      | 0.1  | 1.1      | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00     | 1.00 | 1.00     | 0.00 | 0.00     | 1.00 | 1.00     | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0      | 3.7  | 1.0      | 0.0  | 0.0      | 2.4  | 5.7      | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00     | 0.48 | 0.51     | 0.00 | 0.00     | 0.30 | 0.96     | 0.00 |
| Initial Q (Qb), veh                 | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Sat Delay (ds), s/veh               | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Sat Q (Qs), veh                     | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |
| Sat Cap (cs), veh/h                 | 0        | 0    | 0        | 0    | 0        | 0    | 0        | 0    |
| Initial Q Clear Time (tc), h        | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  | 0.0      | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 2    | 0    | 0    | 4    | 6    | 0    | 0    | 8    |
| Lane Assignment             | T    |      |      | T    | T    |      |      | T    |
| Lanes in Grp                | 1    | 0    | 0    | 1    | 1    | 0    | 0    | 1    |
| Grp Vol (v), veh/h          | 283  | 0    | 0    | 365  | 187  | 0    | 0    | 343  |
| Grp Sat Flow (s), veh/h/ln  | 1777 | 0    | 0    | 1870 | 1777 | 0    | 0    | 1870 |
| Q Serve Time (g_s), s       | 13.6 | 0.0  | 0.0  | 12.1 | 9.0  | 0.0  | 0.0  | 13.8 |
| Cycle Q Clear Time (g_c), s | 13.6 | 0.0  | 0.0  | 12.1 | 9.0  | 0.0  | 0.0  | 13.8 |
| Lane Grp Cap (c), veh/h     | 360  | 0    | 0    | 833  | 271  | 0    | 0    | 589  |
| V/C Ratio (X)               | 0.79 | 0.00 | 0.00 | 0.44 | 0.69 | 0.00 | 0.00 | 0.58 |
| Avail Cap (c_a), veh/h      | 440  | 0    | 0    | 833  | 434  | 0    | 0    | 589  |
| Upstream Filter (I)         | 0.86 | 0.00 | 0.00 | 1.00 | 0.99 | 0.00 | 0.00 | 0.97 |
| Uniform Delay (d1), s/veh   | 34.0 | 0.0  | 0.0  | 17.2 | 36.1 | 0.0  | 0.0  | 25.9 |
| Incr Delay (d2), s/veh      | 6.6  | 0.0  | 0.0  | 1.7  | 3.1  | 0.0  | 0.0  | 4.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 40.6 | 0.0  | 0.0  | 18.9 | 39.2 | 0.0  | 0.0  | 29.9 |
| 1st-Term Q (Q1), veh/ln     | 5.4  | 0.0  | 0.0  | 4.5  | 3.6  | 0.0  | 0.0  | 5.5  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 6: 12th Ave & Hanford Armona Rd

AM 2044+Project  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.7  | 0.0  | 0.0  | 0.4  | 0.2  | 0.0  | 0.0  | 0.7  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln | 6.0  | 0.0  | 0.0  | 4.9  | 3.8  | 0.0  | 0.0  | 6.2  |
| %ile Storage Ratio (RQ%)     | 0.06 | 0.00 | 0.00 | 0.02 | 0.07 | 0.00 | 0.00 | 0.03 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 12   | 0    | 0    | 14   | 16   | 0    | 0    | 18   |
| Lane Assignment                  | T+R  |      |      | R    | T+R  |      |      | R    |
| Lanes in Grp                     | 1    | 0    | 0    | 1    | 1    | 0    | 0    | 1    |
| Grp Vol (v), veh/h               | 291  | 0    | 0    | 86   | 186  | 0    | 0    | 311  |
| Grp Sat Flow (s), veh/h/ln       | 1814 | 0    | 0    | 1460 | 1711 | 0    | 0    | 1460 |
| Q Serve Time (g_s), s            | 13.7 | 0.0  | 0.0  | 1.4  | 9.3  | 0.0  | 0.0  | 10.6 |
| Cycle Q Clear Time (g_c), s      | 13.7 | 0.0  | 0.0  | 1.4  | 9.3  | 0.0  | 0.0  | 10.6 |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.17 | 0.00 | 0.00 | 1.00 | 0.52 | 0.00 | 0.00 | 1.00 |
| Lane Grp Cap (c), veh/h          | 368  | 0    | 0    | 650  | 261  | 0    | 0    | 460  |
| V/C Ratio (X)                    | 0.79 | 0.00 | 0.00 | 0.13 | 0.71 | 0.00 | 0.00 | 0.68 |
| Avail Cap (c_a), veh/h           | 450  | 0    | 0    | 650  | 418  | 0    | 0    | 460  |
| Upstream Filter (I)              | 0.86 | 0.00 | 0.00 | 1.00 | 0.99 | 0.00 | 0.00 | 0.97 |
| Uniform Delay (d1), s/veh        | 34.2 | 0.0  | 0.0  | 3.1  | 36.6 | 0.0  | 0.0  | 10.9 |
| Incr Delay (d2), s/veh           | 6.6  | 0.0  | 0.0  | 0.4  | 3.6  | 0.0  | 0.0  | 7.5  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 40.8 | 0.0  | 0.0  | 3.6  | 40.2 | 0.0  | 0.0  | 18.4 |
| 1st-Term Q (Q1), veh/ln          | 5.5  | 0.0  | 0.0  | 0.9  | 3.6  | 0.0  | 0.0  | 4.7  |
| 2nd-Term Q (Q2), veh/ln          | 0.7  | 0.0  | 0.0  | 0.1  | 0.3  | 0.0  | 0.0  | 1.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln     | 6.2  | 0.0  | 0.0  | 0.9  | 3.9  | 0.0  | 0.0  | 5.6  |
| %ile Storage Ratio (RQ%)         | 0.06 | 0.00 | 0.00 | 0.24 | 0.07 | 0.00 | 0.00 | 2.86 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 33.4 |
| HCM 7th LOS                  | C    |

## Notes

\* HCM 7th Edition computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 7th Signalized Intersection Capacity Analysis

## 7: 11th Ave & Hanford Armona Rd

AM 2044+Project  
07/16/2024

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |  |  |  |  |                                                                                   |   |  |  |  |  |  |
| Traffic Volume (veh/h)        | 315                                                                               | 368                                                                               | 106                                                                               | 106                                                                               | 166                                                                               | 91                                                                                | 54                                                                                  | 417                                                                                 | 127                                                                                 | 70                                                                                  | 318                                                                                 | 137                                                                                 |
| Future Volume (veh/h)         | 315                                                                               | 368                                                                               | 106                                                                               | 106                                                                               | 166                                                                               | 91                                                                                | 54                                                                                  | 417                                                                                 | 127                                                                                 | 70                                                                                  | 318                                                                                 | 137                                                                                 |
| Number                        | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach         | No                                                                                |                                                                                   |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                                | 1870                                                                                | 1723                                                                                | 1723                                                                                | 1870                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h          | 342                                                                               | 400                                                                               | 115                                                                               | 115                                                                               | 180                                                                               | 99                                                                                | 59                                                                                  | 453                                                                                 | 138                                                                                 | 76                                                                                  | 346                                                                                 | 149                                                                                 |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Cap, veh/h                    | 602                                                                               | 1110                                                                              | 866                                                                               | 473                                                                               | 673                                                                               | 370                                                                               | 215                                                                                 | 596                                                                                 | 465                                                                                 | 156                                                                                 | 596                                                                                 | 465                                                                                 |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Prop Arrive On Green          | 0.59                                                                              | 0.59                                                                              | 0.59                                                                              | 0.59                                                                              | 0.59                                                                              | 0.58                                                                              | 0.32                                                                                | 0.32                                                                                | 0.32                                                                                | 0.32                                                                                | 0.32                                                                                | 0.32                                                                                |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Ln Grp Delay, s/veh           | 19.4                                                                              | 10.3                                                                              | 8.4                                                                               | 15.4                                                                              | 0.0                                                                               | 9.7                                                                               | 34.9                                                                                | 33.5                                                                                | 23.7                                                                                | 43.2                                                                                | 27.3                                                                                | 23.9                                                                                |
| Ln Grp LOS                    | B                                                                                 | B                                                                                 | A                                                                                 | B                                                                                 |                                                                                   | A                                                                                 | C                                                                                   | C                                                                                   | C                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h           | 857                                                                               |                                                                                   |                                                                                   |                                                                                   | 394                                                                               |                                                                                   | 650                                                                                 |                                                                                     |                                                                                     |                                                                                     | 571                                                                                 |                                                                                     |
| Approach Delay, s/veh         | 13.7                                                                              |                                                                                   |                                                                                   |                                                                                   | 11.4                                                                              |                                                                                   | 31.6                                                                                |                                                                                     |                                                                                     |                                                                                     | 28.6                                                                                |                                                                                     |
| Approach LOS                  | B                                                                                 |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   | C                                                                                   |                                                                                     |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer:                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                   |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Case No                       | 5.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 5.0                                                                               |                                                                                   | 5.0                                                                                 |                                                                                     | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 33.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 58.0                                                                              |                                                                                   | 33.0                                                                                |                                                                                     | 58.0                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | 5.5                                                                               |                                                                                   |                                                                                   |                                                                                   | 5.5                                                                               |                                                                                   | 5.5                                                                                 |                                                                                     | 5.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Max Green (Gmax), s           | 27.5                                                                              |                                                                                   |                                                                                   |                                                                                   | 52.5                                                                              |                                                                                   | 27.5                                                                                |                                                                                     | 52.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Max Allow Headway (MAH), s    | 4.2                                                                               |                                                                                   |                                                                                   |                                                                                   | 4.5                                                                               |                                                                                   | 4.4                                                                                 |                                                                                     | 4.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear (g_c+I1), s       | 21.9                                                                              |                                                                                   |                                                                                   |                                                                                   | 31.5                                                                              |                                                                                   | 30.9                                                                                |                                                                                     | 19.8                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (g_e), s       | 1.4                                                                               |                                                                                   |                                                                                   |                                                                                   | 3.9                                                                               |                                                                                   | 0.0                                                                                 |                                                                                     | 1.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Prob of Phs Call (p_c)        | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Prob of Max Out (p_x)         | 0.66                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                              |                                                                                   | 1.00                                                                                |                                                                                     | 0.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 5                                                                                 |                                                                                   |                                                                                   |                                                                                   | 7                                                                                 |                                                                                   | 1                                                                                   |                                                                                     | 3                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 831                                                                               |                                                                                   |                                                                                   |                                                                                   | 1013                                                                              |                                                                                   | 760                                                                                 |                                                                                     | 816                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                   |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 1870                                                                              |                                                                                   |                                                                                   |                                                                                   | 1870                                                                              |                                                                                   | 1870                                                                                |                                                                                     | 1134                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 12                                                                                |                                                                                   |                                                                                   |                                                                                   | 14                                                                                |                                                                                   | 16                                                                                  |                                                                                     | 18                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Mvmt Sat Flow, veh/h          | 1460                                                                              |                                                                                   |                                                                                   |                                                                                   | 1460                                                                              |                                                                                   | 1460                                                                                |                                                                                     | 624                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Mvmt                 | 0                                                                                 | 5                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 3                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 7: 11th Ave & Hanford Armona Rd

AM 2044+Project  
07/16/2024

|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     |      | L    |      | L    |      | L    |      | L    |
| Lanes in Grp                        | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 1    |
| Grp Vol (v), veh/h                  | 0    | 59   | 0    | 342  | 0    | 76   | 0    | 115  |
| Grp Sat Flow (s), veh/h/ln          | 0    | 831  | 0    | 1013 | 0    | 760  | 0    | 816  |
| Q Serve Time (g_s), s               | 0.0  | 5.8  | 0.0  | 22.4 | 0.0  | 9.1  | 0.0  | 7.7  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 19.9 | 0.0  | 29.5 | 0.0  | 28.9 | 0.0  | 17.8 |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 831  | 0    | 1013 | 0    | 760  | 0    | 816  |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 29.0 | 0.0  | 54.0 | 0.0  | 29.0 | 0.0  | 54.0 |
| Perm LT Serve Time (g_u), s         | 0.0  | 14.9 | 0.0  | 46.9 | 0.0  | 9.2  | 0.0  | 43.9 |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 5.8  | 0.0  | 22.4 | 0.0  | 9.1  | 0.0  | 7.7  |
| Time to First Blk (g_f), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Lane Grp Cap (c), veh/h             | 0    | 215  | 0    | 602  | 0    | 156  | 0    | 473  |
| V/C Ratio (X)                       | 0.00 | 0.27 | 0.00 | 0.57 | 0.00 | 0.49 | 0.00 | 0.24 |
| Avail Cap (c_a), veh/h              | 0    | 215  | 0    | 602  | 0    | 156  | 0    | 473  |
| Upstream Filter (I)                 | 0.00 | 1.00 | 0.00 | 0.85 | 0.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 34.2 | 0.0  | 16.1 | 0.0  | 40.9 | 0.0  | 14.2 |
| Incr Delay (d2), s/veh              | 0.0  | 0.7  | 0.0  | 3.3  | 0.0  | 2.4  | 0.0  | 1.2  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 34.9 | 0.0  | 19.4 | 0.0  | 43.2 | 0.0  | 15.4 |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 1.1  | 0.0  | 4.2  | 0.0  | 1.6  | 0.0  | 1.2  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.6  | 0.0  | 0.1  | 0.0  | 0.2  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 1.1  | 0.0  | 4.8  | 0.0  | 1.7  | 0.0  | 1.4  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.26 | 0.00 | 1.22 | 0.00 | 0.61 | 0.00 | 0.35 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 0    | 4    | 0    | 6    | 0    | 8    |
| Lane Assignment             |      | T    |      | T    |      | T    |      |      |
| Lanes in Grp                | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 453  | 0    | 400  | 0    | 346  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 1870 | 0    | 1870 | 0    | 1870 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 19.8 | 0.0  | 10.1 | 0.0  | 14.1 | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 19.8 | 0.0  | 10.1 | 0.0  | 14.1 | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 596  | 0    | 1110 | 0    | 596  | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.76 | 0.00 | 0.36 | 0.00 | 0.58 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 596  | 0    | 1110 | 0    | 596  | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 1.00 | 0.00 | 0.85 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 27.9 | 0.0  | 9.6  | 0.0  | 25.9 | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 5.7  | 0.0  | 0.8  | 0.0  | 1.4  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 33.5 | 0.0  | 10.3 | 0.0  | 27.3 | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 7.9  | 0.0  | 3.2  | 0.0  | 5.6  | 0.0  | 0.0  |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis 7: 11th Ave & Hanford Armona Rd

AM 2044+Project  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.9  | 0.0  | 0.2  | 0.0  | 0.2  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 8.8  | 0.0  | 3.4  | 0.0  | 5.8  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.13 | 0.00 | 0.02 | 0.00 | 0.06 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 0    | 14   | 0    | 16   | 0    | 18   |
| Lane Assignment                  |      | R    |      | R    |      | R    |      | T+R  |
| Lanes in Grp                     | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 1    |
| Grp Vol (v), veh/h               | 0    | 138  | 0    | 115  | 0    | 149  | 0    | 279  |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1460 | 0    | 1460 | 0    | 1460 | 0    | 1758 |
| Q Serve Time (g_s), s            | 0.0  | 6.5  | 0.0  | 3.2  | 0.0  | 7.0  | 0.0  | 7.1  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 6.5  | 0.0  | 3.2  | 0.0  | 7.0  | 0.0  | 7.1  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.35 |
| Lane Grp Cap (c), veh/h          | 0    | 465  | 0    | 866  | 0    | 465  | 0    | 1043 |
| V/C Ratio (X)                    | 0.00 | 0.30 | 0.00 | 0.13 | 0.00 | 0.32 | 0.00 | 0.27 |
| Avail Cap (c_a), veh/h           | 0    | 465  | 0    | 866  | 0    | 465  | 0    | 1043 |
| Upstream Filter (I)              | 0.00 | 1.00 | 0.00 | 0.85 | 0.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 23.3 | 0.0  | 8.2  | 0.0  | 23.5 | 0.0  | 9.1  |
| Incr Delay (d2), s/veh           | 0.0  | 0.4  | 0.0  | 0.3  | 0.0  | 0.4  | 0.0  | 0.6  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 23.7 | 0.0  | 8.4  | 0.0  | 23.9 | 0.0  | 9.7  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 2.0  | 0.0  | 0.8  | 0.0  | 2.2  | 0.0  | 2.1  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.1  | 0.0  | 0.2  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 2.1  | 0.0  | 0.8  | 0.0  | 2.2  | 0.0  | 2.3  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.52 | 0.00 | 0.43 | 0.00 | 0.29 | 0.00 | 0.01 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 21.5 |
| HCM 7th LOS                  | C    |

# HCM 7th Signalized Intersection Capacity Analysis

## 8: 12th Ave & Hume Ave

AM 2044+Project  
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|                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|---|---|
|                               |  |  |  |  |  |  |      |   |   |
| Movement                      | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |      |   |   |
| Lane Configurations           |  |  |  |                                                                                   |  |  |      |   |   |
| Traffic Volume (veh/h)        | 24                                                                                | 283                                                                               | 179                                                                               | 11                                                                                | 183                                                                               | 228                                                                               |      |   |   |
| Future Volume (veh/h)         | 24                                                                                | 283                                                                               | 179                                                                               | 11                                                                                | 183                                                                               | 228                                                                               |      |   |   |
| Number                        | 3                                                                                 | 18                                                                                | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 |      |   |   |
| Initial Q, veh                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |      |   |   |
| Lane Width Adj.               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |
| Ped-Bike Adj (A_pbT)          | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |      |   |   |
| Parking Bus Adj               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |
| Work Zone On Approach         | No                                                                                |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |      |   |   |
| Lanes Open During Work Zone   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |
| Adj Sat Flow, veh/h/ln        | 1723                                                                              | 1723                                                                              | 1870                                                                              | 1723                                                                              | 1723                                                                              | 1870                                                                              |      |   |   |
| Adj Flow Rate, veh/h          | 26                                                                                | 308                                                                               | 195                                                                               | 12                                                                                | 199                                                                               | 248                                                                               |      |   |   |
| Peak Hour Factor              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |      |   |   |
| Percent Heavy Veh, %          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |      |   |   |
| Opposing Right Turn Influence | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |      |   |   |
| Cap, veh/h                    | 391                                                                               | 348                                                                               | 1175                                                                              | 72                                                                                | 764                                                                               | 1261                                                                              |      |   |   |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |   |   |
| Prop Arrive On Green          | 0.24                                                                              | 0.24                                                                              | 0.67                                                                              | 0.67                                                                              | 0.67                                                                              | 0.67                                                                              |      |   |   |
| Unsig. Movement Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |
| Ln Grp Delay, s/veh           | 26.9                                                                              | 43.4                                                                              | 0.0                                                                               | 5.7                                                                               | 8.2                                                                               | 5.9                                                                               |      |   |   |
| Ln Grp LOS                    | C                                                                                 | D                                                                                 |                                                                                   | A                                                                                 | A                                                                                 | A                                                                                 |      |   |   |
| Approach Vol, veh/h           | 334                                                                               |                                                                                   | 207                                                                               |                                                                                   |                                                                                   | 447                                                                               |      |   |   |
| Approach Delay, s/veh         | 42.1                                                                              |                                                                                   | 5.7                                                                               |                                                                                   |                                                                                   | 6.9                                                                               |      |   |   |
| Approach LOS                  | D                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |      |   |   |
| Timer:                        |                                                                                   | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6    | 7 | 8 |
| Assigned Phs                  |                                                                                   |                                                                                   | 2                                                                                 | 8                                                                                 |                                                                                   |                                                                                   | 6    |   |   |
| Case No                       |                                                                                   |                                                                                   | 8.0                                                                               | 9.0                                                                               |                                                                                   |                                                                                   | 6.0  |   |   |
| Phs Duration (G+Y+Rc), s      |                                                                                   |                                                                                   | 65.3                                                                              | 25.7                                                                              |                                                                                   |                                                                                   | 65.3 |   |   |
| Change Period (Y+Rc), s       |                                                                                   |                                                                                   | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                   | 4.0  |   |   |
| Max Green (Gmax), s           |                                                                                   |                                                                                   | 48.0                                                                              | 35.0                                                                              |                                                                                   |                                                                                   | 48.0 |   |   |
| Max Allow Headway (MAH), s    |                                                                                   |                                                                                   | 4.0                                                                               | 4.3                                                                               |                                                                                   |                                                                                   | 4.4  |   |   |
| Max Q Clear (g_c+I1), s       |                                                                                   |                                                                                   | 5.7                                                                               | 20.5                                                                              |                                                                                   |                                                                                   | 13.3 |   |   |
| Green Ext Time (g_e), s       |                                                                                   |                                                                                   | 0.7                                                                               | 1.1                                                                               |                                                                                   |                                                                                   | 1.9  |   |   |
| Prob of Phs Call (p_c)        |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 1.00 |   |   |
| Prob of Max Out (p_x)         |                                                                                   |                                                                                   | 0.00                                                                              | 0.01                                                                              |                                                                                   |                                                                                   | 0.00 |   |   |
| Left-Turn Movement Data       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 5                                                                                 | 3                                                                                 |                                                                                   |                                                                                   | 1    |   |   |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 0                                                                                 | 1641                                                                              |                                                                                   |                                                                                   | 1082 |   |   |
| Through Movement Data         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 2                                                                                 | 8                                                                                 |                                                                                   |                                                                                   | 6    |   |   |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 1744                                                                              | 0                                                                                 |                                                                                   |                                                                                   | 1870 |   |   |
| Right-Turn Movement Data      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |
| Assigned Mvmt                 |                                                                                   |                                                                                   | 12                                                                                | 18                                                                                |                                                                                   |                                                                                   | 16   |   |   |
| Mvmt Sat Flow, veh/h          |                                                                                   |                                                                                   | 107                                                                               | 1460                                                                              |                                                                                   |                                                                                   | 0    |   |   |
| Left Lane Group Data          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |   |   |
| Assigned Mvmt                 |                                                                                   | 0                                                                                 | 5                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 1    | 0 | 0 |

Baseline

Synchro 9 Report

# HCM 7th Signalized Intersection Capacity Analysis

## 8: 12th Ave & Hume Ave

AM 2044+Project  
07/16/2024

|                                     |      |      |      |      |      |      |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|
| Lane Assignment                     | L    |      |      |      |      | L    |      |      |
| Lanes in Grp                        | 0    | 0    | 1    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h                  | 0    | 0    | 26   | 0    | 0    | 199  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln          | 0    | 0    | 1641 | 0    | 0    | 1082 | 0    | 0    |
| Q Serve Time (g_s), s               | 0.0  | 0.0  | 1.1  | 0.0  | 0.0  | 7.5  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s         | 0.0  | 0.0  | 1.1  | 0.0  | 0.0  | 11.3 | 0.0  | 0.0  |
| Perm LT Sat Flow (s_l), veh/h/ln    | 0    | 0    | 1641 | 0    | 0    | 1082 | 0    | 0    |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Perm LT Eff Green (g_p), s          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 61.3 | 0.0  | 0.0  |
| Perm LT Serve Time (g_u), s         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 57.6 | 0.0  | 0.0  |
| Perm LT Q Serve Time (g_ps), s      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 7.5  | 0.0  | 0.0  |
| Time to First Blk (g_f), s          | 0.0  | 61.3 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Serve Time pre Blk (g_fs), s        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop LT Inside Lane (P_L)           | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h             | 0    | 0    | 391  | 0    | 0    | 764  | 0    | 0    |
| V/C Ratio (X)                       | 0.00 | 0.00 | 0.07 | 0.00 | 0.00 | 0.26 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h              | 0    | 0    | 631  | 0    | 0    | 764  | 0    | 0    |
| Upstream Filter (I)                 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.87 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh           | 0.0  | 0.0  | 26.8 | 0.0  | 0.0  | 7.5  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh              | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  | 0.7  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh         | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh            | 0.0  | 0.0  | 26.9 | 0.0  | 0.0  | 8.2  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln             | 0.0  | 0.0  | 0.4  | 0.0  | 0.0  | 1.3  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)        | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln        | 0.0  | 0.0  | 0.4  | 0.0  | 0.0  | 1.4  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)            | 0.00 | 0.00 | 0.07 | 0.00 | 0.00 | 0.18 | 0.00 | 0.00 |
| Initial Q (Qb), veh                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h                 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

### Middle Lane Group Data

|                             |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt               | 0    | 2    | 8    | 0    | 0    | 6    | 0    | 0    |
| Lane Assignment             | T    |      |      |      |      |      |      |      |
| Lanes in Grp                | 0    | 0    | 0    | 0    | 0    | 1    | 0    | 0    |
| Grp Vol (v), veh/h          | 0    | 0    | 0    | 0    | 0    | 248  | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln  | 0    | 0    | 0    | 0    | 0    | 1870 | 0    | 0    |
| Q Serve Time (g_s), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 4.5  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 4.5  | 0.0  | 0.0  |
| Lane Grp Cap (c), veh/h     | 0    | 0    | 0    | 0    | 0    | 1261 | 0    | 0    |
| V/C Ratio (X)               | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.20 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h      | 0    | 0    | 0    | 0    | 0    | 1261 | 0    | 0    |
| Upstream Filter (I)         | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.87 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 5.6  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 5.9  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 1.2  | 0.0  | 0.0  |

Baseline

Synchro 9 Report



# HCM 7th Signalized Intersection Capacity Analysis 8: 12th Ave & Hume Ave

AM 2044+Project  
07/16/2024

|                              |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|
| 2nd-Term Q (Q2), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%) | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 1.3  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| Initial Q (Qb), veh          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh        | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Right Lane Group Data

|                                  |      |      |      |      |      |      |      |      |
|----------------------------------|------|------|------|------|------|------|------|------|
| Assigned Mvmt                    | 0    | 12   | 18   | 0    | 0    | 16   | 0    | 0    |
| Lane Assignment                  | T+R  |      | R    |      |      |      |      |      |
| Lanes in Grp                     | 0    | 1    | 1    | 0    | 0    | 0    | 0    | 0    |
| Grp Vol (v), veh/h               | 0    | 207  | 308  | 0    | 0    | 0    | 0    | 0    |
| Grp Sat Flow (s), veh/h/ln       | 0    | 1851 | 1460 | 0    | 0    | 0    | 0    | 0    |
| Q Serve Time (g_s), s            | 0.0  | 3.7  | 18.5 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Cycle Q Clear Time (g_c), s      | 0.0  | 3.7  | 18.5 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Sat Flow (s_R), veh/h/ln | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prot RT Eff Green (g_R), s       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Prop RT Outside Lane (P_R)       | 0.00 | 0.06 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Grp Cap (c), veh/h          | 0    | 1248 | 348  | 0    | 0    | 0    | 0    | 0    |
| V/C Ratio (X)                    | 0.00 | 0.17 | 0.89 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avail Cap (c_a), veh/h           | 0    | 1248 | 562  | 0    | 0    | 0    | 0    | 0    |
| Upstream Filter (I)              | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Uniform Delay (d1), s/veh        | 0.0  | 5.4  | 33.5 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Incr Delay (d2), s/veh           | 0.0  | 0.3  | 9.9  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Initial Q Delay (d3), s/veh      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Control Delay (d), s/veh         | 0.0  | 5.7  | 43.4 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 1st-Term Q (Q1), veh/ln          | 0.0  | 1.0  | 6.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 2nd-Term Q (Q2), veh/ln          | 0.0  | 0.1  | 1.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 3rd-Term Q (Q3), veh/ln          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Back of Q Factor (f_B%)     | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| %ile Back of Q (50%), veh/ln     | 0.0  | 1.1  | 6.9  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile Storage Ratio (RQ%)         | 0.00 | 0.02 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Q (Qb), veh              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Final (Residual) Q (Qe), veh     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Delay (ds), s/veh            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Q (Qs), veh                  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Sat Cap (cs), veh/h              | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Initial Q Clear Time (tc), h     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

## Intersection Summary

|                              |      |
|------------------------------|------|
| HCM 7th Control Delay, s/veh | 18.6 |
| HCM 7th LOS                  | B    |

**MEMORANDUM**

**DATE:** March 03, 2023

**To:** Linda J Hakimi, PE

**FROM:** Ambarish Mukherjee, P.E., AICP

**SUBJECT:** Silicon Valley Ranch Residential Project Vehicle Miles Traveled (VMT) Analysis Memorandum

LSA has prepared a Vehicle Miles Traveled (VMT) Analysis Memorandum (Memo) for the proposed Silicon Valley Ranch residential development (project) in the City of Hanford (City). The project will be located at the southwest corner of 12th Ave and Hanford-Armona Rd (south of State Highway 198) in the City. The Project proposes to develop 22 acres with up to 342 single family dwelling units.

**BACKGROUND**

On December 28, 2018, the California Office of Administrative Law cleared the revised California Environmental Quality Act (CEQA) guidelines for use. Among the changes to the guidelines was removal of vehicle delay and level of service from consideration under CEQA. With the adopted guidelines, transportation impacts are to be evaluated based on a project's effect on vehicle miles traveled (VMT).

The project is located within the jurisdiction of City of Hanford. The City recently adopted its Senate Bill 743 (SB 743) guidelines, and therefore, the VMT analysis has been based upon the methodology and significant threshold criteria identified in the "City of Hanford - VMT Thresholds and Implementation Guidelines, November 2022" (guidelines).

The guidelines include multiple screening criteria for small to medium sized land use projects to be screened out of a detailed VMT analysis. The project was reviewed with all screening criteria from the guidelines and it was determined that the project doesn't meet any screening criteria. Therefore, a detailed VMT analysis was conducted for the project.

**VMT Metrics and Thresholds**

The project consists of residential land uses only and the guidelines established use of VMT per capita to evaluate residential land uses. Also, as per the guidelines, the definition of the region was established as Kings County and the threshold for evaluation of land use projects was established as 13%. Therefore, the project will constitute a significant impact if the project VMT per capita is greater than 87% of the baseline VMT per capita of Kings County. Numerically, based on the guidelines if the project VMT per capita is greater than 8.99, then project will have a significant VMT impact.

The Kings County Association of Governments (KCAG) Travel Demand Model (TDM) is the regional travel demand model applicable to jurisdictions within Kings County including the City for evaluating project VMT. Therefore, based on the guidelines, KCAG TDM was used to conduct project VMT analysis.

### Project Traffic Analysis Zone Update

To calculate the project VMT, the first step was to update the TAZs in the model that include the project area. The project should be isolated in the travel model to estimate project VMT. KCAG TDM includes ability to add new TAZs. One new TAZ was used to model the project land use. The project land use (dwelling units) was input into the model as households in the newly created zone for modeling purposes. No project specific network modifications were conducted. Model run was conducted for existing/base year scenario with updated model inputs. The outputs from this updated model run were utilized to estimate project specific VMT metrics.

### VMT ANALYSIS

As mentioned above, the outputs from the updated model run were used to estimate project VMT per capita. Table A shows the VMT analysis results using the county as the region. As shown in Table A, VMT per capita metric for the project is 6.9% higher than the regional threshold. As mentioned above, the regional/countywide average VMT per capita and the threshold were obtained from the City's guidelines (Table E: Significance Thresholds for VMT Analysis).

**Table A: Project and Threshold VMT per Capita**

|                       | <b>Silicon Valley Ranch<br/>(project)</b> | <b>City of Hanford VMT<br/>Threshold *</b> | <b>Difference</b> | <b>Percentage<br/>Difference</b> |
|-----------------------|-------------------------------------------|--------------------------------------------|-------------------|----------------------------------|
| <b>VMT per capita</b> | 9.61                                      | 8.99                                       | 0.62              | 6.9%                             |

*Source: Kings County Association of Governments (KCAG) Travel Demand Model*

*\* Threshold obtained from City of Hanford VMT Thresholds and Implementation Guidelines, November 2022*

*Threshold is 87% of regional baseline ( $10.33 \times 0.87 = 8.99$ )*

### Conclusion

As mentioned before, the project consists of residential land uses only. The City's guidelines recommend use of VMT per capita to evaluate residential projects. Also, based on the guidelines the project would constitute a significant VMT impact if the project VMT per capita is greater than 87% of the baseline Kings County VMT per capita. As shown in Table A, the project VMT per capita is higher than the threshold and hence the project has a significant VMT impact.

Detailed VMT calculation for the project is included in Appendix A.

### ATTACHMENT

Appendix A –VMT Calculation Worksheet

**Appendix A**  
**VMT Calculations**  
**Silicon Valley Ranch**

| 2018                                  | Silicon Valley Ranch (Project) | City of Hanford Threshold* |
|---------------------------------------|--------------------------------|----------------------------|
| <b>Total Households</b>               | 342                            |                            |
| <b>Total Population</b>               | 1,069                          |                            |
| <b>Homebased Production (HBP) VMT</b> | 10,274                         |                            |
| <b>HBP VMT per capita</b>             | 9.61                           | 8.99                       |

*Source: Kings County Association of Governments (KCAG) Travel Demand Model*

*\*: Threshold Obtained from City of Hanford VMT Thresholds and Implementation Guidelines, November 2022*



## **NOTICE OF AVAILABILITY FOR PUBLIC REVIEW AND HEARING ON THE DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE PROPOSED SILICON VALLEY RANCH RESIDENTIAL DEVELOPMENT PROJECT**

This is to advise that the City of Hanford has prepared an Environmental Impact Report (EIR) for the project identified below. As mandated by State law, the minimum public review period for this document is 45 days.

### ***Project Name and Description***

Silicon Valley Ranch Residential Development Project – a request to construct 326 single-family residences, internal roads, a 2.86-acre drainage retention basin, and a 3.58-acre park on an approximately 88.9-acre site (Project). An approximately 13.87-acre portion of the site at the northeast corner of the property is intended to be removed via a lot-line adjustment. The Project is within the City of Hanford's Sphere of Influence (SOI) but will be annexed into the City limits through annexation.

### ***Project Location***

The Silicon Valley Ranch Residential Development Project is located south of Hanford Armona Road, in the sphere of influence of the City of Hanford. The Project encompasses approximately 88.9 acres (APN 011-040-008, 010, and 027)

**COMMENT PERIOD:** November 25, 2024 to – January 9, 2025 (45 days)

**PUBLIC HEARING AND COMMENT:** The City of Hanford is soliciting comments on the adequacy and completeness of the analysis and proposed mitigation measures described in the Draft EIR. You may comment by providing testimony at the public hearing on:

**DATE:** Tuesday, January 14, 2025

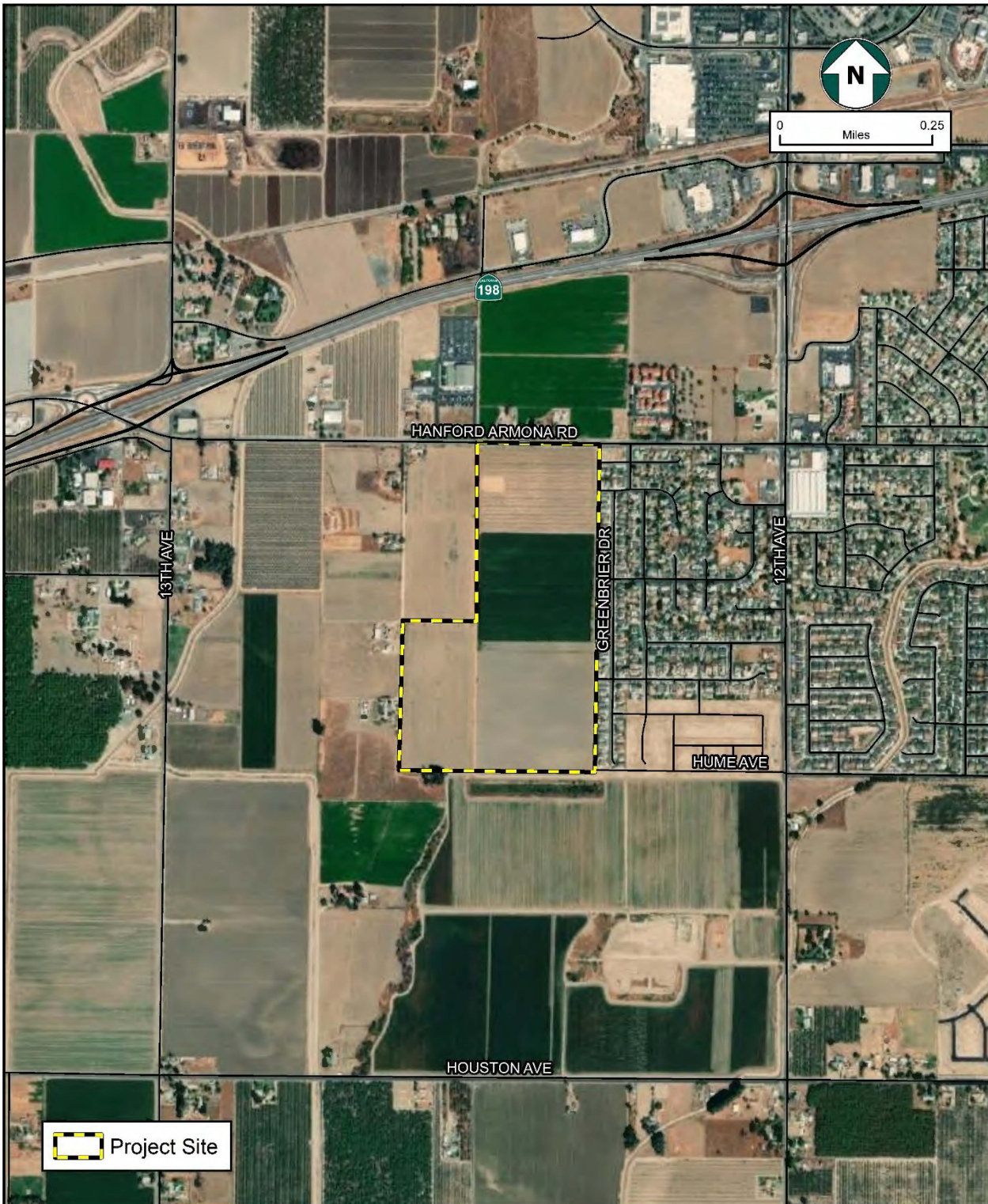
**TIME:** 5:30 p.m.

**LOCATION:** Council Chamber of the City of Hanford Civic Auditorium, 400 N. Douty Street, Hanford, CA.

The document and documents are available for review at the City of Hanford, Community Development Department located at 317 N. Douty Street, and at the Hanford Branch Library located at 401 Douty Street, Hanford, CA 93230 or <https://www.cityofhanfordca.com/1236/Current-Frindex>; or <https://coganet.org.ca.gov/2024060956>

**HOW TO COMMENT:** You may provide testimony at the public hearing on the date and time specified above or provide written comments prior to the close of public comment period on Tuesday, January 14, 2025, at 5:30 p.m. to: Senior Planner, Gabrielle Myers, 317 N. Douty Street, Hanford, CA 93230 or via email: [gmyers@hanfordca.gov](mailto:gmyers@hanfordca.gov)





**Figure 3-1**  
**Project Site Area**

**FINDINGS OF FACT IN SUPPORT OF FINDINGS  
RELATED TO SIGNIFICANT ENVIRONMENTAL IMPACTS**

**State CEQA Guidelines Section 15091**

**for**

**Silicon Valley Ranch Residential Development (Tract No. 943) Project**

**Final Environmental Impact Report  
SCH# 2024060956**

**Lead Agency: City of Hanford**

**SECTION I. INTRODUCTION**

The following findings of fact are based in part on the information contained in the draft and final Environmental Impact Report (EIR) for the Silicon Valley Ranch Residential Development Project (Project) as well as additional facts found in the complete record of proceedings. The final focused EIR is hereby incorporated by reference and is available for review at the City of Hanford (City), City of Hanford Community Development Department, 317 N Douty St, Hanford, CA 93230.

**SECTION II. FINDINGS REGARDING THE POTENTIAL ENVIRONMENTAL EFFECTS  
OF THE PROJECT**

The City issued a notice of preparation of a draft focused EIR on June 21, 2024. Based on the initial study, technical studies and Notice of Preparation, a determination was made that the final focused EIR would contain a comprehensive analysis of environmental issues not screened out during the Notice of Preparation. With respect to all impacts identified as “less than significant” or as having “no impact” in the final focused EIR, the Planning Commission finds that those impacts have been described accurately and are less than significant or have no impact. Despite concluding that certain impacts would be less than significant or would have no impact, the final focused EIR nonetheless incorporates mitigation measures in the form of complying with the goals, policies, and implementation measures of the City of Hanford General Plan or other adopted regulations. The Planning Commission finds that these effects are less than significant or have no impact before and after implementation of these mitigation measures.

In addition, one impact in the final focused EIR were found to be “significant and unavoidable.” The Planning Commission finds that this impact has been described accurately and is significant and unavoidable.

**LAND USE AND PLANNING**

***A. Environmental Effects of the Project Found to Have No Impact on the Environment or Have a Less Than Significant Impact on the Environment.***

*The Project could cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect (Impact 4.2-1)*

The City of Hanford General Plan establishes land use policies and regulations that are applicable to the Project. In addition to the City of Hanford General Plan, applicable policies and regulations of the Kings County General Plan and Kings County LAFCo were identified as they pertain to annexations of land.

The Project site has a General Plan designation of Low Density Residential and would be rezoned R-L-5. Per the City General Plan zoning matrix, the R-L-5 zone district is compatible with the General Plan designation. Approval of the tentative map subject to the provisions of the City of Hanford municipal code would allow subdivision of the Project area into lot sizes consistent with the R-L-5 zone district. Pursuant to Table 17.08.020, the proposed development of single-family dwellings throughout the subdivided Project area are permitted uses under the R-L-5 zone district.

The Project is consistent with the goals and policies of the City of Hanford General Plan and Kings County General Plan. Therefore, the Project would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigation an environmental effect. Impacts of the Project are less than significant, and no mitigation is required.

***B. Environmental Effects of the Project that Are Potentially Significant, but that Can Be Mitigated to Less Than Significant Levels.***

The Project would not have any environmental effects on land use and planning that are potentially significant and that can be mitigated to less than significant levels.

***C. Effects of the Project that Cannot Be Mitigated to a Level Less Than Significant.***

The Project would not have any environmental effects on land use and planning that cannot be mitigated to a less than significant level.

**Findings**

The proposed Project would not have any potentially significant environmental effects related to land use and planning. No mitigation would be required, and impacts are less than significant.

**Level of Significance**

Impacts would be less than significant.

**Brief Explanation of the Rationale for the Finding**

CEQA requires that all feasible and reasonable mitigation be applied to the project to avoid or substantially lessen significant impacts. However, impacts related to land use and planning would be less than significant, and no mitigation measures are required.

***D. Cumulative Environmental Effects of the Proposed Project that Would Have a Less Than Significant Impact on the Environment.***

As discussed in the Cumulative Project List section of the draft EIR, 12 similar projects are proposed within a one and a half-mile radius of the proposed Project, the geographic scope being the City of Hanford General Plan planning area. The Project and future development are required to be consistent with the City of Hanford General Plan and other applicable planning documents. Cumulative projects requiring additional



consideration including rezones, General Plan Amendments, and annexation would require approval by the County. Consistency with the City's applicable General Plan policies and Zoning Ordinance (and any other applicable planning documents) would ensure compliance and orderly development of the proposed Project and other related cumulative projects. Additionally, all cumulative projects are subject to environmental review and compliance with all federal, State, and local policies and plans. As such, the proposed Project's incremental contribution to the less than significant cumulative impacts would not be cumulatively considerable. Cumulative impacts related to land use and planning would result in a less than significant impact on the environment.

***E. Cumulative Environmental Effects of the Proposed Project that Would Have a Significant Impact on the Environment.***

The Project would not have any cumulative effects on land use and planning that would have a significant impact.

**Findings**

The proposed Project would not have any potentially cumulative significant environmental effects related to land use and planning. No mitigation would be required and impacts are less than significant.

**Level of Significance**

Impacts would be cumulatively less than significant.

**Brief Explanation of the Rationale for the Finding**

CEQA requires that all feasible and reasonable mitigation be applied to the project to avoid or substantially lessen significant impacts. However, cumulative impacts would be less than significant, and no mitigation measures are required.

**TRANSPORTATION AND TRAFFIC**

***A. Environmental Effects of the Project Found to Have No Impact on the Environment or Have a Less Than Significant Impact on the Environment.***

***B. Environmental Effects of the Project that Are Potentially Significant, but that Can Be Mitigated to Less Than Significant Levels.***

*The Project could conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities (Impact 4.2-1).*

The Hanford General Plan has policies related to traffic systems. The General Plan has established LOS E as the acceptable level on streets and intersections within the area bounded by State Route (SR) 198, 10th Avenue, 11th Avenue, and Florinda Avenue, and a peak hour LOS D on all other streets and intersections within the Planned Growth Boundary. The County of Kings has established LOS D as the acceptable level of traffic congestion on County roads. Since the study facilities for this Project lie outside of the SR 198, 10th Avenue, 11th Avenue, and Florinda Avenue boundary, the LOS D threshold was utilized to evaluate the potential significance of LOS impacts to the City of Hanford roadway facilities and the County of Kings facilities.

Signal warrant criteria was met for the 13<sup>th</sup> Avenue and Hanford Armona Road intersection; however, it is important to note that a signal warrant defines the minimum condition under which signalization of an intersection might be warranted. Meeting this threshold does not suggest traffic signals are required, but rather, that other traffic factors and conditions be considered to determine whether signals are truly justified. Pursuant to General Plan Policy T36, the Project proponent will be required to pay traffic development impact fees. The provision of an intersection signalization would be determined by the City of Hanford. Improvement costs for signalization are within the purview of traffic development impact fees as required in Policy T36, therefore eventual signalization of the intersection by the City would address the LOS deficiency caused by General Plan buildout (2044) and Project development (2044+Project).

For the 12<sup>th</sup> Avenue and Hanford Armona Road intersection, the TIA recommends improvements be made to the eastbound roadway to include changing the existing eastbound right turn lane (EBR) to an eastbound through and right turn lane (EBTR). The Project proponent would be required to pay their fair share cost for the needed improvement to ensure that the intersection by the year 2044, operates at an acceptable LOS. The inclusion of fair share cost payment is recommended as a Mitigation Measure and is included as MM 4.2-1. Implementation of MM 4.2-1 would allow the studied intersection to operate at an acceptable LOS under City LOS standards and reduce impacts to less than significant.

### ***Mitigation Measures***

MM 4.2-1: The Project proponent or developer shall be required to pay their fair share of costs for the needed improvements. This includes changing the 12<sup>th</sup> Avenue and Hanford Armona Road intersection eastbound right turn lane to an eastbound through lane and a right turn lane.

The fair share cost for the improvement is calculated at 18.94% and shall be collected by the City of Hanford at the appropriate time

### ***Level of Significance***

Impacts would be *less than significant with implementation of mitigation measures*.

### ***Finding***

The proposed Project would not have any potentially significant environmental effects related to LOS and the impacts that the Project may have on the surrounding roadway network. With implementation of Mitigation Measure MM 4.2-1 would reduce impacts to less than significant.

### ***Brief Explanation of the Rational for Finding***

CEQA requires that all feasible and reasonable mitigation be applied to the project to avoid or substantially lessen significant impacts related to General Plan policies related to LOS. Implementation of Mitigation Measure MM 4.2-1 as described above, would reduce impacts to a less than significant level.

### ***C. Effects of the Project that Cannot Be Mitigated to a Level Less Than Significant.***

*Conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b) (Impact 4.2-2)*

Land use developments meeting one or more of the screening criteria contained in the VMT Guidelines are presumed to create a less than significant transportation impact and no further VMT analysis is required. These criteria relate to project type, size, location, proximity to transit, and trip-making potential. The

project does not meet any of the screening criteria. Therefore, a detailed VMT analysis was prepared for the Project.

For projects that are not screened out, a quantitative analysis of VMT impacts must be prepared and compared against the adopted VMT thresholds of significance. According to the VMT Guidelines, residential developments that generate more than 8.99 daily VMT for residential VMT per capita would be considered to have a significant transportation impact.

Based on the VMT analysis, the Project would result in 9.61 VMT per capita and exceed the 8.99 VMT per capita threshold. As a result, it is recommended that the Project implement VMT mitigation measures for the residential component to reduce VMT per Capita. In order to reduce VMTs, a project must decrease the number of vehicle miles travels to and from the Project site. For land development projects, VMT mitigation focuses on measures that reduce the number and/or length of single-occupant vehicle trips generated by the project. These measures included increasing residential density and providing easy access to high-quality public transit within 0.5 miles of a high frequency transit station. However, there are no applicable and feasible mitigation measures available to reduce VMT below the adopted City and County thresholds. Therefore, the Project is expected to result in a significant transportation impact under CEQA

#### ***Mitigation Measures***

No mitigation measures

#### ***Level of Significance***

Impacts would be ***significant and unavoidable***

#### ***Finding***

There are no feasible and applicable mitigation measures that would be able to reduce VMT for the Project under City adopted thresholds. Therefore, impacts are considered significant and unavoidable.

#### ***Brief Explanation of the Rationale for the Finding***

CEQA requires that all feasible and reasonable mitigation be applied to the Project to reduce impacts. However, no mitigation measures were identified that are feasible and applicable to the Project that would reduce VMT under the City adopted thresholds.

#### ***D. Cumulative Environmental Effects of the Proposed Project that Would Have a Less Than Significant Impact on the Environment.***

There are no cumulative impacts related to transportation and traffic would result in a less than significant impact on the environment.

#### ***E. Cumulative Environmental Effects of the Proposed Project that Would Have a Significant Impact on the Environment.***

#### ***Significant Effect***

The Project would conflict or be inconsistent with CEQA Guidelines 15064.3, Subdivision (b). In combination with other approved or reasonably foreseeable projects, cumulative impacts to VMT would also be significant and unavoidable.

#### *Description of Significant Impact*

The Project's VMT would exceed the City's adopted VMT per capita thresholds.

#### *Finding*

There are no feasible and applicable mitigation measures that would be able to reduce VMT for the Project under City adopted thresholds. Therefore, impacts are considered significant and unavoidable. This impact is overridden by Project benefits as set forth in the statement of overriding considerations. There are no other feasible mitigation measures or changes to the Project that would reduce this impact to a less than significant level

#### *Brief Explanation of the Rationale for the Finding*

CEQA requires that all feasible and reasonable mitigation be applied to the Project to reduce impacts. However, no mitigation measures were identified that are feasible and applicable to the Project that would reduce VMT under the City adopted thresholds.

### **SECTION III. FINDINGS REGARDING CONSIDERATIONS, WHICH MAKE CERTAIN ALTERNATIVES, ANALYZED IN THE FINAL ENVIRONMENTAL IMPACT REPORT INFEASIBLE.**

The following findings and brief explanation of the rationale for the findings regarding Project alternatives identified in the EIR are set forth to comply with the requirements of Section 15091(s)(3) of the *CEQA Guidelines*.

The consideration of alternatives is an integral component of the CEQA process. The selection and evaluation of a reasonable range of alternatives provides the public and decision-makers with information on ways to avoid or lessen environmental impacts created by a Project. When selecting alternatives for evaluation, CEQA requires alternatives that meet most of the basic objectives of the Project, while avoiding or substantially lessening the Project's significant effects. Thus, the objective of the Project was considered by this board in evaluating the alternatives. This objective is to build and operate an economically viable and competitive development with a mix of commercial and residential uses in compliance with applicable laws and regulations, optimally utilizing the available land resource, and while minimizing any environmental impacts to the extent feasible. Thus, objectives for the Project were considered in evaluating the alternatives.

The Project has the following objectives:

- Provide a variety of housing opportunities with a range of styles, sizes, and values that will be designed to satisfy existing and future demand for quality housing in the area.
- Provide a sense of community and walkability within the development through the use of street patterns, parks/open space areas, landscaping, and other Project amenities.
- Create a successful and financially feasible Project by meeting the housing needs of the area.
- Provide a residential development that assists the City in meeting its General Plan and Housing Element requirements and objectives.

The alternatives considered in this EIR include two land use alternatives, a reduced construction alternative, and the No-Project Alternative. CEQA requires that alternatives that have been considered but rejected by the lead agency be addressed in the EIR. This portion of the EIR is also to determine which alternative is considered to be environmentally superior. This evaluation is to be based on which alternatives have the fewest unmitigated impacts and this comparison is to be made even for alternatives that may not completely fulfill all of the Project objectives. For the purpose of this evaluation, the following impacts were determined to be unmitigable after implementation of the mitigations recommended in the EIR.

### ***Significant Impacts Listed***

- Transportation and Traffic – The project and the project in conjunction with cumulative projects would conflict or be inconsistent with CEQA Guidelines 15064.3, Subdivision (b).

All other impacts can be mitigated to a relative level of insignificance through the implementation of the mitigation measures. Mitigation measures that reduced these impacts to a level below the Thresholds of Significance are detailed in the EIR.

### **No Project Alternative**

Under the No Project Alternative, the Project area would remain unchanged and there would be no residential units or parks constructed. Under the No Project Alternative, the Project area would remain unchanged and there would be no residential units or parks constructed. The No Project Alternative would keep the site as agriculture and remain under the jurisdiction of Kings County. As no change would occur, the Project site would continue to be consistent with the Kings County General Plan land use designation and zoning of Limited Agriculture, 10 acres (AL10). The City is also required to meet the State Regional Housing Needs Allocation (RHNA) for new housing in the City under the Housing Element of the City General Plan. The No Project Alternative would not fulfill the objectives of the Project or assist the City in meeting RHNA. With regard to transportation impacts, the No Project Alternative would result in no new trips generated

The No Project Alternative would reduce the significant and unavoidable impact relating to VMT; however, the City is required to meet the State Regional Housing Needs Allocation (RHNA) for new housing in the City. The No Project Alternative would not fulfill the objectives of the Project or assist the City in meeting RHNA.

### **Reduced Project Alternative**

This alternative would decrease the number of single-family residential houses from 326 to 242. As described in this draft EIR, the proposal to approve the tentative tract map, annex the site into the City, and rezoning the site to R-L-5 would remain the same. A similar outcome to the proposed Project would occur with regard to County and City General Plan consistency. The annexation would meet County and LAFCo objectives in addition to providing planned City expansion within their SOI. This alternative will meet all Project objectives but would have a reduced positive effect of assisting the City in meeting regional housing needs. Under this Alternative, overall VMT for the Project would decrease; however, per capita VMT impacts would remain *significant and unavoidable*.

With regard to City LOS thresholds, overall trip generation would be reduced, resulting in lessened impacts on studied intersections. However, this reduction is still likely to exceed LOS thresholds cumulatively, and require mitigation as indicated in this draft EIR to improve the impacted intersection of 12<sup>th</sup> Avenue and Hanford Armona Road. Impacts regarding LOS would continue to be *less than significant with mitigation incorporated*.

## **Multi-Family Alternative**

This alternative would replace the proposed single-family residential with multi-family apartments at a density of at least 14.5 dwelling units per gross acre (1,088 units). The Project site is currently designated by the General Plan for low-density residential and rezoned R-L-5. The proposed Project request would be modified to include a General Plan Amendment and a Zone Change to Medium Density Residential (R-M) to allow multi-family apartments. With regard to the addition of a General Plan Amendment, consistency findings with General Plan goals and policies would be necessary to determine if the proposed Medium Density Residential land use would comply.

Under this Alternative, the overall density increase would result in higher trips generated. This would, in turn, cause impacts to LOS and VMT. For LOS, a rise in vehicle trips generated due to an increased number of residents originating from the Project site would result in higher utilization of intersections in the vicinity of the site. Based on this assumption, the higher utilization could negatively impact LOS for the studied intersections and would potentially require additional mitigation/improvements to intersections to meet LOS standards.

With regard to the adopted screening criteria and VMT thresholds, Alternative C does not meet the screening criteria and would likely generate more than 1,000 average daily trips, is not located within 0.5 miles of a transit priority area and is not located within an area where existing VMT per capita is low. An increase in density over the national average (9.1 dwelling units per acre) can result in a VMT reduction. Assuming no change in the amount of developable land, the project would need at least 455 dwelling units to reach the national average and be credited for any reduction in project VMT. Moreover, the project would require a total of 590 dwelling units to mitigate the impact of project VMT to a less than significant level. Therefore, VMT under this Alternative would result in a less than significant impact.

## **Different Site Alternative**

This alternative would relocate the Project to a different site in order to be located nearer to corridor mixed use where a mix of commercial and office uses would be available in addition to be located closer to major transit corridors. This alternative would place the Project on the east side of the City, bounded by Lacey Boulevard to the south, 9 1/4 Avenue to the west, SR 43 to the west, and Grangeville Boulevard to the north. This alternative will meet all Project objectives and would assist the City in meeting its regional housing needs.

With regard to LOS standards, the alternative site would require an analysis of intersections in the vicinity of the site and the comparisons of future conditions at the chosen intersections. It can be determined that under Alternative D, impacts to LOS at intersections could occur similar to the proposed Project, overall VMT for the Project could decrease slightly; however, per capita, VMT would remain the same as the proposed Project. Impacts would continue to be significant and unavoidable. In addition, the applicant does not currently own either of these properties and it is not known if the current owners are willing to sell these properties.

## ***Environmentally Superior Alternative***

An EIR is required to identify the environmentally superior alternative from among the range of reasonable alternatives that are evaluated. Section 15126.6(e)(2) of the CEQA Guidelines requires that an environmentally superior alternative be designated, and states, “[I]f the environmentally superior alternative is the No Project Alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives.” In Chapter 6-Alternatives, Table 6-1 displays the environmental impacts of alternatives to the Project in terms of the impact areas that were analyzed in this Draft EIR in Chapter 4,

Environmental Impact Analysis. As shown, the Multi-Family Alternative would be considered the environmentally superior alternative.

Selection of an environmentally superior alternative is based on an evaluation of the extent to which the alternatives reduce or eliminate the significant impacts associated with the Project on a comparison of the remaining environmental impacts of each alternative. In conducting this comparative evaluation, it can be difficult to make a determination of relative significance because some categories are relatively more or less important and cannot be simply summed. In some cases, these categories do not create a picture of the nuances of the alternatives.

***Finding:*** The Planning Commission finds that the No Project alternative is the environmentally superior alternative, but that the No Project Alternative would be less desirable than the Project because it would not achieve any of the Project objectives.

***Facts Supporting the Finding:*** The EIR contains facts and analyses supporting the Finding, some of which are set forth here. The No Project Alternative would not help the City to meet the required RHNA for new housing in the City. The Alternative would not fulfill the objectives of the Project. Demand for residential development would be met by other projects that may have greater impacts than the proposed Project. Moreover, employment opportunities would not be generated for construction workers in Handford or Kings County. In short, the No Project Alternative does not meet overall Project objectives.

#### ***Environmentally Superior” Build Alternative”***

Where, as here, the environmentally superior alternative is the” No Project Alternative”, the State CEQA Guidelines require the identification of an environmentally superior alternative from among the remaining alternatives. (CEQA Guidelines, Section 15126.6(e)(2).)

***Finding:*** The Planning Commission evaluated the Project and Alternatives A, B, C and D to the Project, and finds that Alternative D is the environmentally superior alternative. Alternative C – Multi-Family would reduce significant and unavoidable environmental impacts relating to VMT while fulfilling most of the objectives of the proposed Project. However, while Alternative C would incrementally reduce many environmental impacts of the Project, it would not reduce significant and unavoidable impacts of the Project to below a level of significance. Moreover, it may not be economically feasible to implement, thereby impeding the ability to meet the Project objectives set forth by the applicant.

## STATEMENT OF OVERRIDING CONSIDERATIONS

### State CEQA Guidelines Section 15093

for

### Silicon Valley Ranch Residential Development (Tract No. 943) Project

#### Final Environmental Impact Report (SCH# 2024060956)

#### Lead Agency: City of Hanford

The California Environmental Quality Act (CEQA) allows a public agency to balance the benefits of a proposed Project against its significant unavoidable adverse impacts in determining whether to approve the Project. Section 15093 of the CEQA Guidelines states:

CEQA requires the decision making agency to balance, as applicable, the economic, legal, social, technological, or other benefits of a proposed Project against its unavoidable environmental risks when determining whether to approve the Project. If the specific economic, legal, social, technological, or other benefits of a proposed Project outweigh the unavoidable adverse environmental effects, the adverse environmental effects may be considered “acceptable.”

As discussed in more detail in the final EIR and CEQA Findings of Fact (Section 15091), the Project will result in environmental impacts related to Vehicle Miles Traveled (VMT), which cannot be feasibly mitigated by the implementation of mitigation measures, will remain significant and unavoidable adverse impacts. These significant unavoidable impacts are summarized below and constitute those impacts for which this Statement of Overriding Considerations is made. These impacts are summarized below and constitute those impacts for which this statement of overriding considerations is made.

#### Significant and Unavoidable Impacts

1. Transportation and Traffic The Project’s Vehicle Miles Travelled (VMT) and Cumulative VMT would exceed the City’s VMT thresholds and is considered significant and unavoidable.

CEQA requires that all feasible and reasonable mitigation be applied to the Project to reduce impacts. However, no mitigation measures were identified that are feasible and applicable to the Project that would reduce VMT under the City adopted thresholds. The Project would conflict or be inconsistent with CEQA Guidelines 15064.3, Subdivision (b). In addition, in combination with other approved or reasonably foreseeable projects, cumulative impacts to VMT would also be significant and unavoidable.

#### Findings

The City Planning Commission (Commission) finds and determines in recommending approval of the development of the Project that it has considered the identified means of lessening or avoiding the Project’s significant effects. The Commission further finds and determines that the specific economic, legal, social, technological, or other benefits, including region-wide or statewide environmental benefits of the project, as discussed below, outweigh its unavoidable adverse environmental effects. Therefore, this Commission



finds and determines in recommending approval that such benefits override, outweigh, and make “acceptable” any such remaining environmental impacts of the project (CEQA Guidelines Section 15092 (a) and (b)).

The following benefits and considerations outweigh such significant and unavoidable adverse environmental impacts. All of these benefits and considerations are based on the facts set forth in the findings, the final focused EIR, and the record of proceedings for the project. Each of these benefits and considerations constitutes a separate and independent basis that justifies approval of the project, so that if a court were to set aside the determination that any particular benefit or consideration justifies project approval, the Commission would stand by its determination that the remaining benefits or considerations are sufficient to justify and substantiate project approval.

### **Facts in Support of Statement of Overriding Considerations**

The objective of the Project is to build and operate an economically viable and competitive development with residential uses in compliance with applicable laws and regulations, optimally utilizing the available land resource, and while minimizing any environmental impacts to the extent feasible.

Each benefit set forth below constitutes an overriding consideration warranting approval of the project, independent of the other benefits, and the City Council determines that the adverse environmental impacts of the project are “acceptable” if any of these benefits would be realized. The project would provide benefits as follows:

- 1. Accommodates the Need for Regional Housing.** At buildout, the Project proposes to construct approximately 326 dwelling units. As discussed in Section 3.4.14 – Population and Housing, the Project would help the City achieve its need to accommodate residential growth. The housing goal for the City of Hanford, according to its Regional Housing Needs Allocation (RHNA), includes the construction of 15,695 additional dwelling units by 2035 to accommodate estimated population growth. The Project would accommodate the need established by the RHNA, the City of Hanford General Plan Housing Element, and the projected population growth of the City of Hanford and surrounding area.
- 2. Provides Orderly Expansion and Consistent with General Plan and Zoning Ordinance.** The proposed Project provides new development in an orderly manner and is coordinated with the General Plan provision of infrastructure, public infrastructure, and public improvements. The proposed Project allows for the incremental expansion of infrastructure and public services and provides a high-quality environment for living. In addition, the proposed Project provides a safe and efficient street system that links all Project areas and allows for the movement of both vehicle and non-vehicle traffic. The Project will be required to use and expand upon the existing local road system and contribute to certain regional transportation improvements which will help to develop the transportation system in the area.

Further, the Project would fill in an undeveloped island of county land surrounded by development and will connect to the City’s existing infrastructure of roads, water, sewage and drainage. It will also create a new park in the area and connect the dead-end roads along the eastern boundary so that residents have another access to Hanford Armona Road.

- 3. Provides More Efficient Use of Land and Existing Resources.** The property was previously farmed with animal feed and fodder such as wheat, milo and corn. Permanent crops such as almonds, pistachios, vineyard and olives were no longer viable due to reduced water availability. The Project will convert the site from agricultural to an urban use. Water for continued crop

cultivation is no longer available to the property when the existing infrastructure was cut off by development of a roadway. Also, with the new Sustainable Groundwater Management Act (SGMA) laws the well water would have been inadequate and too expensive to continue farming the entire property.

This is not prime farmland being taken out of production; the proposed Project is considered a higher and better use of the property. Its proximity to State Route 198 and other existing roadways makes it a logical and efficient location for development.

4. **Will Provide Additional Economic Benefits.** Farming the site required less than two workers for the entire year. The economic benefit and revenue were marginal to the City and County. The Project will result in creating affordable housing at lower market rates, in addition to providing good paying construction jobs. Landscaping and yard maintenance costs alone will be larger than the agricultural income currently generated from the property. The construction should also increase the tax base and create more revenue for the City. Construction of 324 new homes selling at an average sales price of \$325,000, would generate an approximate \$105,300,000 value that would be taxed at 1.1 percent. This would generate over \$1,150,000 of property tax income to the City.

### **Conclusion**

As the CEQA Lead Agency for the proposed action, the City has reviewed the project description for the Project and the FEIR and fully understands the Project proposed by the applicant. Based on the entire record before the Commission, and having considered the unavoidable adverse impacts of the Project, the Commission hereby determines that all feasible mitigation has been adopted to reduce the potentially significant impacts identified in the FEIR, and that no additional feasible mitigation is available to further reduce significant impacts.

The Commission finds that economic, social, technological, and other considerations of the Project outweigh the unavoidable adverse impacts described above. Further the Commission finds that each of the separate benefits of the Project is hereby determined to be, in itself and independent of the other Project benefits, a basis for overriding all unavoidable environmental impacts identified in the FEIR and in the CEQA Findings. In making this finding, the Commission has balanced the benefits of the Project against its unavoidable environmental impacts and has indicated its willingness to accept those risks

**CITY OF HANFORD PLANNING COMMISSION  
STAFF REPORT**

**MEETING DATE:** Tuesday, January 14, 2025, continued from August 8, 2023

**PROJECT:** General Plan Amendment No. 2022-01: a request to change the general plan designation from Highway Commercial to Service Commercial and High-Density Residential on approximately 39.16 acres.

Rezone No. 2022-01: a request to change the zoning on 39.16 acres from C-H Highway Commercial to C-S Service Commercial and R-H High-Density Residential with a Planned Unit Development overlay.

Planned Unit Development No. 2022-01: a request to allow blended zoning for a master planned medical and mixed-use development, including the future construction of 15 buildings consisting of medical outpatient clinic services, a hotel and conference center, specialized education, retail, medical office, skilled nursing and assisted living, and multi-family residential uses, as well as a bio infiltration basin, associated open space, circulation and parking, and infrastructure improvements.

Mitigated Negative Declaration No. 2023-93: a request to certify that the project will have a less than significant impact with the incorporation of mitigation measures.

**LOCATION:** The project is located between 11<sup>th</sup> and 12<sup>th</sup> Avenues along Glendale Drive, north of Highway 198 (APN 011-060-007, 011-060-008, 012-290-040, 012-290-042, and 012-290-054).

**PLANNER:** Gabrielle Myers, Senior Planner

**STAFF RECOMMENDATION**

1. Recommend certification of Mitigated Negative Declaration No. 2023-93 for the project to the City Council.
2. Adopt Resolution No. 2025-04, recommending approval of General Plan Amendment No. 2022-01 to the City Council.
3. Adopt Resolution No. 2025-05, recommending approval Rezone No. 2022-01 to the City Council.
4. Adopt Resolution No. 2025-06, recommending approval of Planned Unit Development No. 2022-01 to the City Council.

**RECOMMENDED MOTION**

1. I move to recommend certification of Mitigated Negative Declaration No. 2023-93 for the project to the City Council.

2. I move to adopt Resolution No. 2025-04, recommending approval of General Plan Amendment No. 2022-01 to the City Council.
3. I move to adopt Resolution No. 2025-06, recommending approval Rezone No. 2022-01 to the City Council.
4. I move to adopt Resolution No. 2025-07, recommending approval of Planned Unit Development No. 2022-01 to the City Council.

#### CONTINUATION REQUEST

The proposed project was scheduled to be heard by the Planning Commission on August 8, 2023, however, on the day of the meeting, a comment letter was received by staff and distributed to Commissioners, (**Attachment 6**) which commented on the environmental document prepared for the project and pointed out concerns related to the initial study and the intent to adopt a mitigated negative declaration. Since the letter was received the day of the meeting, there was not adequate time to review the letter and address the concerns at the time of the public hearing. Therefore, staff and the applicant requested the Planning Commission continue the public hearing.

At the time, it was uncertain how long the letter received would take to address, so continuation to a date certain was not requested and staff noticed the new public hearing at the time it was taken off hold by the applicant and the Notice of Intent to Adopt a Mitigated Negative Declaration was recirculated for an additional 30-day review period.

#### PROJECT DESCRIPTION

The project is a request to develop Hanford Place, a medical and mixed-use development, totaling 39.16 acres. The Hanford Place Master Plan includes the future construction of 15 buildings consisting of medical outpatient clinic services, a hotel and conference center, specialized education, retail, medical office, skilled nursing and assisted living, and multi-family residential uses, as well as a bio infiltration basin, associated open space, circulation and parking, and infrastructure improvements, as shown in the Hanford Place Master Plan - **Attachment 1**.

#### Location

The project is located between 11<sup>th</sup> and 12<sup>th</sup> Avenues along Glendale Drive, north of Highway 198 (APN 011-060-007, 011-060-008, 012-290-040, 012-290-042, and 012-290-054). as shown in Figure 1.

Figure 1: Project Location



LSA

LEGEND

 Project Site

FIGURE 2



0 250 500  
FEET

SOURCE: Google Aerial Imagery (2020).

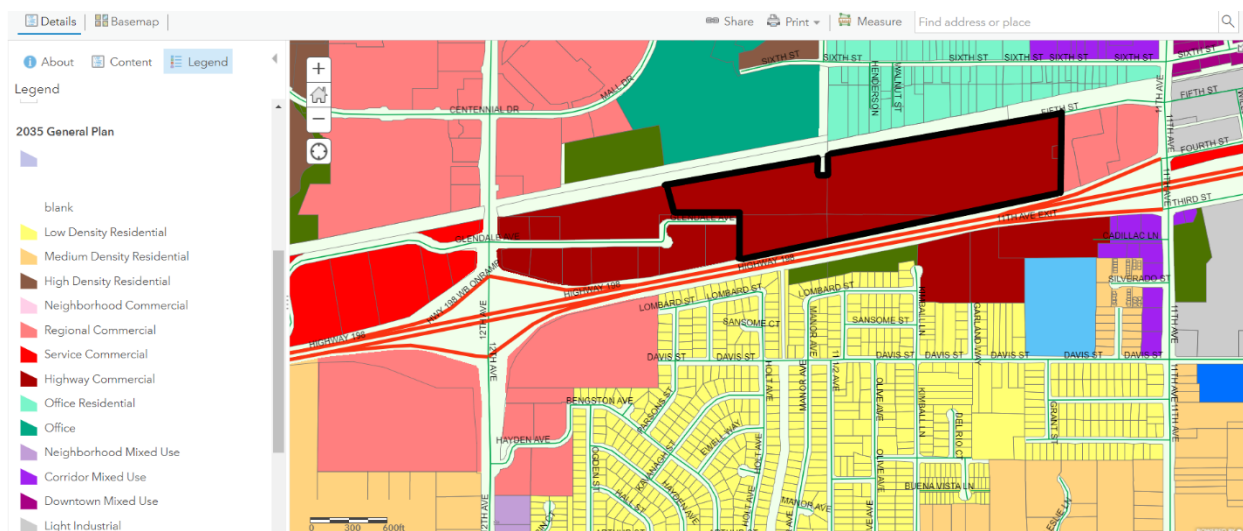
Hanford Place Project  
Hanford, Kings County, California  
Project Location

## General Plan Designation

The project site is designated as Highway Commercial by the General Plan, see Figure 2. According to General Plan Policy L56, the purpose of the Highway Commercial Land Use Designation is to provide areas for commercial establishments that offer accommodations, supplies, services, or recreational opportunities primarily to the traveling public. According to Policy L57, typical uses in the Highway Commercial Land Use Designation include businesses that support the recreation and tourism industry and prevent the intrusion of incompatible, non-tourist related uses which would be overly disruptive or would directly compete with shopping areas of nearby communities. Typical uses include full-service hotels, motels, eating establishments, tourist-oriented retail goods, entertainment, and services, automobile related service and repair, and car washes.

As proposed, the project is incompatible with the present land use designation, since it proposes the construction of a mixed-use medical development, which is not designed to provide services primarily to the traveling public. The project includes a request to change the land use designation from Highway Commercial to a combination of Service Commercial and High-Density Residential.

**Figure 2: General Plan Designation (outlined in bold)  
Highway Commercial**

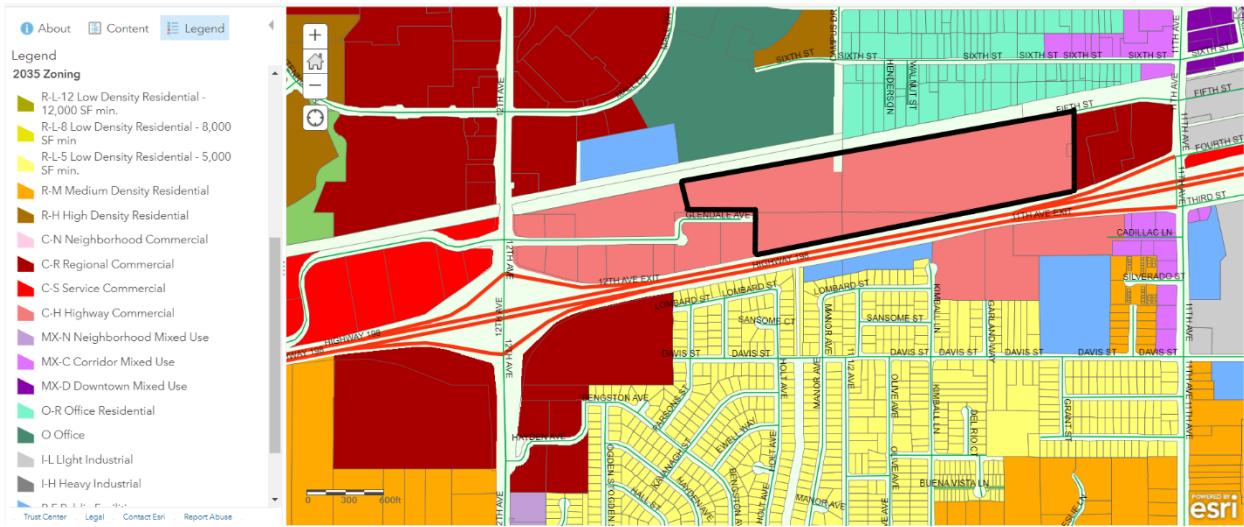


## Zoning

The project site is zoned C-H Highway Commercial, in accordance with the General Plan Designation, Highway Commercial. See Figure 3. The project is incompatible with the present zoning, since it proposes land uses that are not permitted in the C-H Highway Commercial zone district, including medical and professional offices, urgent care clinics, a nursing college or other satellite campus, and multi-family residential. The project includes a request to change the zoning on the property from C-H Highway Commercial to a combination of C-S Service Commercial and R-H Highway Commercial.



**Figure 3: Zoning (outlined in bold)**  
**C-H Highway Commercial**



**Figure 4: Zone Use Table**  
**Education, Religious, and Assembly Uses**

| Commercial, Office, and Industrial Zone Use Table                                   |                                                                    |                  |         |         |         |                 |          |          |                             |   |         |         |             |    |    |                                                         |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------|------------------|---------|---------|---------|-----------------|----------|----------|-----------------------------|---|---------|---------|-------------|----|----|---------------------------------------------------------|
| P = Use Is Permitted by Right    C = Use Requires Conditional Use Permit            |                                                                    |                  |         |         |         |                 |          |          |                             |   |         |         |             |    |    |                                                         |
| A = Use Requires Administrative Use Permit    T = Use Requires Temporary Use Permit |                                                                    |                  |         |         |         |                 |          |          |                             |   |         |         |             |    |    |                                                         |
| Blank = Use Is Not Allowed                                                          |                                                                    |                  |         |         |         |                 |          |          |                             |   |         |         |             |    |    |                                                         |
| Land Uses                                                                           |                                                                    | Commercial Zones |         |         |         | Mixed Use Zones |          |          | Industrial and Office Zones |   |         |         | Other Zones |    |    | Specific Land Use Standards<br>(See Identified Section) |
|                                                                                     |                                                                    | C-<br>N          | C-<br>R | C-<br>S | C-<br>H | MX-<br>N        | MX-<br>C | MX-<br>D | O-<br>R                     | O | I-<br>L | I-<br>H | AP          | PF | CO |                                                         |
| C                                                                                   | Education, Religious and Assembly Uses                             |                  |         |         |         |                 |          |          |                             |   |         |         |             |    |    |                                                         |
| C5                                                                                  | College or university, public or private                           |                  | C       | C       |         |                 | C        | C        |                             |   |         |         |             | P  |    |                                                         |
| C13                                                                                 | School; charter, trade, vocational, art, business, or professional |                  | C       | P       |         |                 | C        | C        | C                           | C | C       |         |             | P  |    |                                                         |

**Figure 5: Zone Use Table  
Office and Medical Uses**

| <b>Commercial, Office, and Industrial Zone Use Table</b><br>P = Use Is Permitted by Right    C = Use Requires Conditional Use Permit<br>A = Use Requires Administrative Use Permit    T = Use Requires Temporary Use Permit<br>Blank = Use Is Not Allowed |                                            |                  |     |     |     |                 |      |      |                             |   |     |     |             |    |    |                                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|------------------|-----|-----|-----|-----------------|------|------|-----------------------------|---|-----|-----|-------------|----|----|------------------------------------------------------|
| Land Uses                                                                                                                                                                                                                                                 |                                            | Commercial Zones |     |     |     | Mixed Use Zones |      |      | Industrial and Office Zones |   |     |     | Other Zones |    |    | Specific Land Use Standards (See Identified Section) |
|                                                                                                                                                                                                                                                           |                                            | C-N              | C-R | C-S | C-H | MX-N            | MX-C | MX-D | O-R                         | O | I-L | I-H | AP          | PF | CO |                                                      |
| <b>E</b>                                                                                                                                                                                                                                                  | <b>Office and Medical Uses</b>             |                  |     |     |     |                 |      |      |                             |   |     |     |             |    |    |                                                      |
| E4                                                                                                                                                                                                                                                        | Laboratory; general, medical or dental     |                  | C   | P   | C   |                 | P    | C    |                             | P | C   |     |             |    |    |                                                      |
| E5                                                                                                                                                                                                                                                        | Hospital, general or psychiatric           |                  |     |     |     |                 |      |      |                             | P |     |     |             | P  |    |                                                      |
| E6                                                                                                                                                                                                                                                        | Office; medical, dental, or optometry      |                  |     |     |     |                 |      |      |                             |   |     |     |             |    |    |                                                      |
|                                                                                                                                                                                                                                                           | Under 2,000 sq. ft.                        | P                | P   | P   |     | P               | P    | P    | P                           | P |     |     |             |    |    |                                                      |
|                                                                                                                                                                                                                                                           | 2,000 – 6,000 sq. ft.                      | P                | C   | P   |     | P               | P    | P    | P                           | P |     |     |             |    |    |                                                      |
|                                                                                                                                                                                                                                                           | Over 6,000 sq. ft.                         | P                |     | P   |     | P               | P    | P    | P                           | P |     |     |             |    |    |                                                      |
| E7                                                                                                                                                                                                                                                        | Office; professional or commercial         |                  |     |     |     |                 |      |      |                             |   |     |     |             |    |    |                                                      |
|                                                                                                                                                                                                                                                           | Under 2,000 sq. ft.                        | P                | P   | P   |     | P               | P    | P    | P                           | P |     |     |             |    |    |                                                      |
|                                                                                                                                                                                                                                                           | 2,000 – 6,000 sq. ft.                      | P                | C   | P   |     | P               | P    | P    | P                           | P |     |     |             |    |    |                                                      |
|                                                                                                                                                                                                                                                           | Over 6,000 sq. ft.                         | P                |     | P   |     | P               | P    | P    | P                           | P |     |     |             |    |    |                                                      |
| E8                                                                                                                                                                                                                                                        | Pharmacy                                   | P                | P   | P   |     | P               | P    | P    |                             | P |     |     |             |    |    |                                                      |
| E9                                                                                                                                                                                                                                                        | Urgent care center or other walk-in clinic | P                | C   | C   |     | P               | P    | P    |                             | P |     |     |             |    |    |                                                      |



**Figure 6: Zone Use Table  
Residential Uses**

| <b>Commercial, Office, and Industrial Zone Use Table</b><br>P = Use Is Permitted by Right    C = Use Requires Conditional Use Permit<br>A = Use Requires Administrative Use Permit    T = Use Requires Temporary Use Permit<br>Blank = Use Is Not Allowed |                                                                       |                  |     |     |     |                 |      |      |                             |   |     |     |             |    |    |                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|------------------|-----|-----|-----|-----------------|------|------|-----------------------------|---|-----|-----|-------------|----|----|---------------------------------------------------------|
| Land Uses                                                                                                                                                                                                                                                 |                                                                       | Commercial Zones |     |     |     | Mixed Use Zones |      |      | Industrial and Office Zones |   |     |     | Other Zones |    |    | Specific Land Use Standards<br>(See Identified Section) |
|                                                                                                                                                                                                                                                           |                                                                       | C-N              | C-R | C-S | C-H | MX-N            | MX-C | MX-D | O-R                         | O | I-L | I-H | AP          | PF | CO |                                                         |
| <b>H</b>                                                                                                                                                                                                                                                  | <b>Residential Uses</b>                                               |                  |     |     |     |                 |      |      |                             |   |     |     |             |    |    |                                                         |
| H1                                                                                                                                                                                                                                                        | Assisted living, skilled nursing, or hospice facility                 |                  |     |     |     | C               | C    | C    | C                           |   |     |     |             |    |    |                                                         |
| H6                                                                                                                                                                                                                                                        | Hotel or motel                                                        |                  | C   | C   | P   |                 | P    | P    |                             |   |     |     |             |    |    |                                                         |
| H7                                                                                                                                                                                                                                                        | Live/work facility                                                    |                  |     | P   |     | P               | P    | P    | P                           |   |     |     |             |    |    |                                                         |
| H8                                                                                                                                                                                                                                                        | Mobile home park                                                      |                  |     |     |     |                 |      |      |                             |   |     |     |             |    |    | 17.60.100                                               |
| H9                                                                                                                                                                                                                                                        | Multifamily dwelling, 2 units per building (duplex)                   |                  |     |     |     | P               | P    | P    | P                           |   |     |     |             |    |    |                                                         |
| H10                                                                                                                                                                                                                                                       | Multifamily dwelling, 3 or 4 units per building (triplex or fourplex) |                  |     |     |     | P               | P    | P    | C                           |   |     |     |             |    |    |                                                         |
| H11                                                                                                                                                                                                                                                       | Multifamily dwelling, 5 or more units per building                    |                  |     |     |     | P               | P    | P    |                             |   |     |     |             |    |    |                                                         |

#### Required Entitlements

As presented above, the project is inconsistent with the present land use and zoning designation. As such, the project involves a general plan amendment, rezone, and planned unit development/master plan. Future development will require site plan reviews for physical development.

#### **General Plan Amendment No. 2022-01**

A General Plan Amendment is required for the project, in order to change the General Plan designation of the subject site from Highway Commercial to a combination of Service Commercial and High-Density Residential.

#### **Rezone 2022-01**

A rezone is required for the project, in order to change the zoning from C-H Highway Commercial to a combination of C-S Service Commercial and R-H High-Density Residential with a Planned Unit Development overlay.

#### **Planned Unit Development No. 2022-01/Master Plan**

As described above, the project involves a request to allow a mixed-use medical development, spanning 39.16 acres. A planned unit development is required in order to establish project-specific design criteria, allow a blending of uses regardless of zoning, and allow cross-access, shared parking, shared landscaping, and shared lighting.

### Surrounding Uses

As referenced in the table below, the project site is surrounded by commercial uses to the south and east, vacant land to the west, and a parking lot to the north. The properties to the north and east are planned and zoned for mixed use development and the properties south and west are planned and zoned for service commercial.

| Direction | Existing Land Use                                                    | General Plan Designation                                | Zone District                                                             |
|-----------|----------------------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------------------------|
| North     | Railroad; Adventist Health Medical Center; single-family residential | Office; Office Residential                              | O Office; O-R Office Residential                                          |
| South     | CA-198; car dealership; basin; single-family residential             | Highway Commercial, Open Space, Low-Density Residential | C-H Highway Commercial, PF Public Facility, R-L-5 Low-Density Residential |
| East      | Integrate shopping center – grocery, retail, gym, restaurant         | Regional Commercial                                     | C-R Regional Commercial                                                   |
| West      | Veterinary hospital, mini-storage, California Highway Patrol, hotel  | Highway Commercial                                      | C-H Highway Commercial                                                    |

### **Access and Circulation**

Vehicular access to the site is proposed to be provided by Glendale Avenue, Fifth Street, and Campus Drive. The extension of these roadways would be constructed to City standards and would be dedicated as public right-of-way. The proposed project would also construct a roundabout, which will also be dedicated as public right-of-way and would be constructed to Caltrans or City-approved standards. As part of the project, Glendale Avenue would be realigned at the northwest corner of the Hanford Veterinary Hospital development. The existing knuckle will be removed, and Glendale Avenue will be realigned using speed-specific design curves. Any new portions of Glendale Avenue will be dedicated as public right-of-way and any portion of existing right of way not used would be abandoned. Fifth Street would be extended starting at the existing alignment before realigning to the roundabout. In addition, the proposed project proposes to provide 1,466 parking spaces throughout the project site.

## Utilities

Utilities required to serve the proposed project include water, sanitary sewer, storm water drainage, electricity, natural gas, and telecommunications infrastructure. Water service, sewage disposal, and refuse collection will be provided by the City. In addition, all City utilities (i.e., water, sewer, and storm drain) would be constructed within the proposed right-of-way. Storm drainage is proposed to be collected by an underground conveyance system and delivered to the onsite bio infiltration basin. The basin would be privately held by the owners and would collect both the proposed project and the City right-of-way. All storm drain facilities will be required to be designed to City standards.

The proposed project also proposes to convert the Peoples Ditch to a 66-inch-diameter below-ground pipeline where the ditch currently exists and would terminate approximately 20 feet short of the existing pipeline that runs under SR-198. The depth of the below-ground pipeline will be between two and six feet.

The proposed project will also require electrical, natural gas, telephone, and cable improvements. Electricity will be provided by Southern California Edison; natural gas will be provided by Southern California Gas; and telephone services will be provided by AT&T. The extent of work required for utilities and gas will be determined during final project design.

## Construction

The proposed project is proposed to be constructed in three phases. Construction is anticipated to last approximately three years. The proposed project will comply with City standards, including the City's current building code, landscape standards, and lighting standards. In addition, the proposed project would be graded similar to other developments throughout the City.

## PROJECT EVALUATION

### General Plan Amendment No. 2022-01

General Plan Amendment No. 2022-01 is a request to change the land use designation from Highway Commercial to a combination of Service Commercial and High-Density Residential, due to incompatibility with the Hanford Place Master Plan and the existing Highway Commercial land use designation.

#### 3.5.4 Highway Commercial

##### *Policy L56 Purpose of Highway Commercial Land Use Designation*

Establish the Highway Commercial land use designation to provide areas for commercial establishments that offer accommodations, supplies, services, or recreational opportunities primarily to the traveling public.

##### *Policy L57 Typical Uses in Highway Commercial Land Use Designation*

Define the uses allowed in the Highway Commercial land use designation to include businesses that support the recreation and tourism industry and to prevent the intrusion of incompatible, non-tourist related uses which would be overly disruptive or would directly compete with shopping

areas of nearby communities. Typical uses include full-service hotels, motels, eating establishments, tourist-oriented retail goods, entertainment, and services, automobile related service and repair, and car washes.

Analysis: The Hanford Place Master Plan proposes to develop a mixed-use medical complex with uses such as medical offices, clinics, psychiatric health facility, a hotel and conference center, nursing college, strip retail, a skilled nursing facility, memory care facility, assisted living, and multi-family residential. The uses proposed to be located within the Hanford Place Medical and Mixed-Use development are inconsistent with the uses typical of the Highway Commercial Land Use Development.

*Policy L58 Design of the Highway Commercial Land Use Designation*

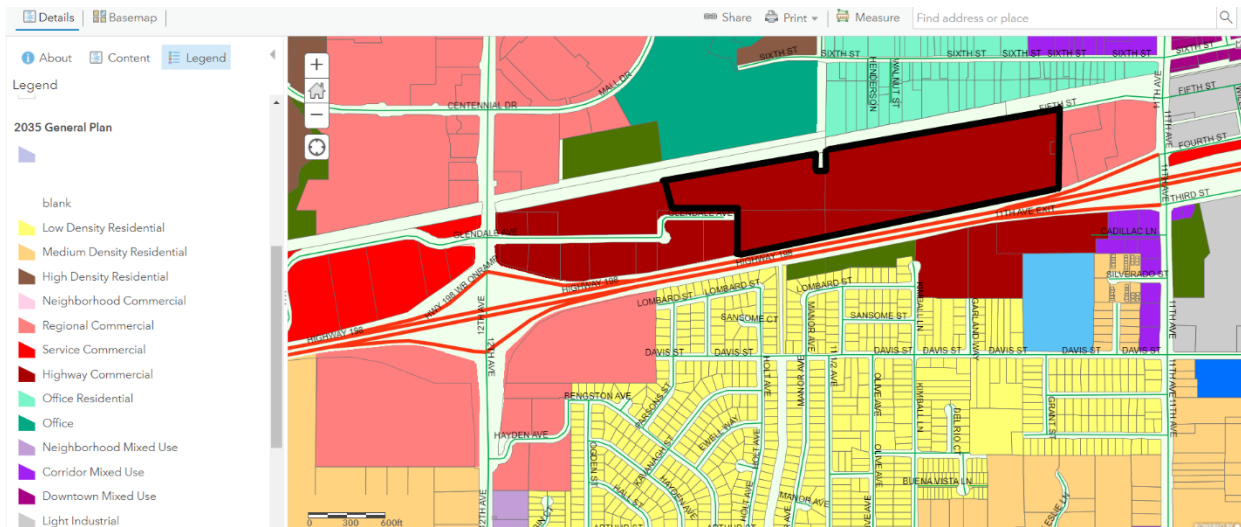
Require that new development projects and major site reconfigurations in the Highway Commercial land use designation provide site layouts, landscaping, and screening so that the site appears aesthetically pleasing from the public street.

*Policy L59 Location and Size of Highway Commercial Land Use Designation*

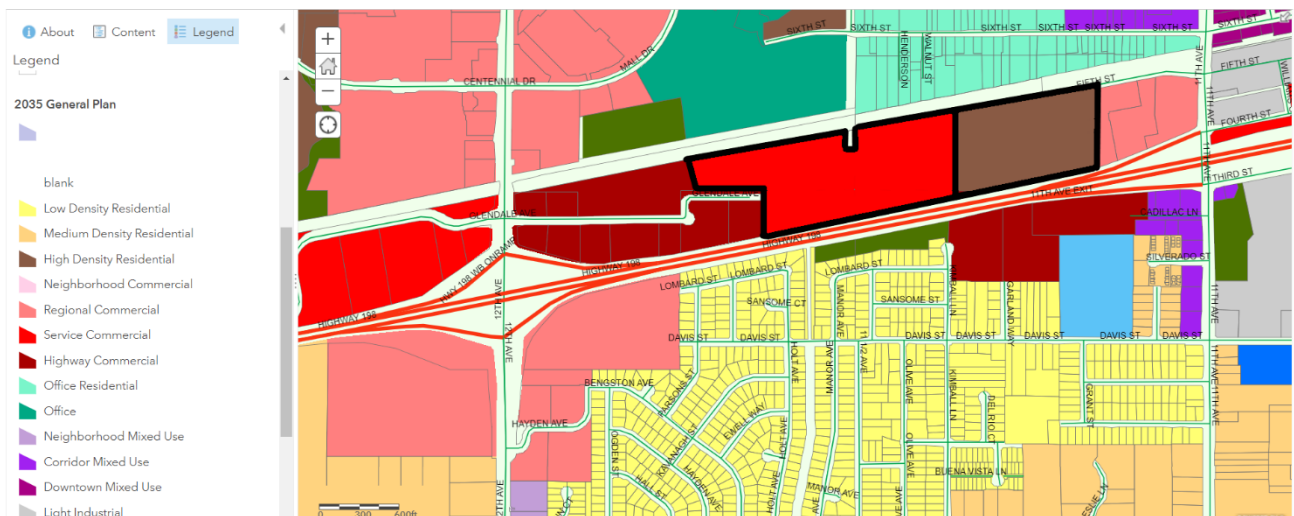
Locate Highway Commercial land use designations in areas that have nearby access to Highway 198 or Highway 43.

Analysis: As proposed, the project is incompatible with the present land use designation, since it proposes the construction of a mixed-use medical development, which is not designed to provide services primarily to the traveling public. General Plan Amendment No. 2022-01 proposes to change the land use designation from Highway Commercial to a combination of Service Commercial and High-Density Residential.

**Figure 7: Existing General Plan Designation  
Highway Commercial**



**Figure 8: Proposed General Plan Designation  
Service Commercial and High-Density Residential**



### 4.5.3 Service Commercial

#### *Policy L51 Purpose of Service Commercial Land Use Designation*

Establish the Service Commercial land use designation to provide for establishments that engage in servicing equipment, materials, products and related sales and travel conveniences, but which do not require the manufacturing, assembly, packaging or processing of articles or merchandise for distribution.

#### *Policy L52 Typical Uses in Service Commercial Land Use Designation*

Define the uses allowed in the Service Commercial land use designation to include a broad range of commercial activities such as businesses which have both retail and service components. Among these are uses such as vehicle sales and service; auto rental and equipment rental; motels; restaurants (including fast food); service stations; car washes; building material supply; warehousing; wholesale trade; contractors, suppliers, small equipment yards; and other similar uses.

Analysis: The development proposed within Hanford Place does not require the manufacturing, assembly, packaging, or processing of articles of merchandise for distribution. The uses proposed are mostly medical-related. Although the Service Commercial designation is generally engaged in servicing and related sales, the designation permits a multitude of medical uses, including medical offices of any size and clinics/urgent cares, proposed within the Hanford Place development. The proposed development does not propose any use prohibited by the Service Commercial land use designation.

#### *Policy L53 Existing Service Commercial Designations*

Encourage existing service commercial centers to expand or adapt to market changes through reuse, rehabilitation, and infill development.

Analysis: The Hanford Place development does not constitute an existing Service Commercial development.

#### *Policy L54 Design of the Service Commercial Land Use Designation*

Require that new development projects and major site reconfigurations in the Service Commercial land use designation provide site layouts, landscaping, and screening so that the site appears aesthetically pleasing from the public street.

Analysis: The proposed development is designed with landscaping and screening which is aesthetically pleasing from the public street.

#### *Policy L55 Location and Size of Service Commercial Land Use Designation*

Locate Service Commercial land use designations along Highway 198 and where they can serve as a buffer land use, such as between residential areas and railroad corridors. Require new development projects to be a minimum of one acre.

Analysis: The Service Commercial land use designation will be located along Highway 198 and the Southern Pacific Railroad, as required. The Service Commercial land use designation will encompass approximately 30 acres of the development area.

### **4.4.3 High Density Residential**

The expected density range for High Density Residential is 14 to 29 units per gross acre with an expected typical density of 16 units per gross acre.

Analysis: The development proposes a 40-unit memory care facility, 40-unit assisted living facility and 90-multi-family units for a combined total of 170 residential units over approximately 10 acres (15 acres minus the five-acre storm drainage basin). The proposed density within the development is approximately 17 units per acre, which is within the prescribed density range of

the high-density residential zone district. At this time, the plan is conceptual, density will be verified during site plan review.

*Policy L38 Purpose of the High-Density Residential Land Use Designation*

Establish the High-Density Residential land use designation primarily for multi-family apartment and condominium development in proximity to Arterial streets, commercial and recreational facilities, and employment centers.

Analysis: The Hanford Place Development proposes to develop multi-family apartments and assisted living multi-family units within the plan area. The multi-family units will be proximal to employment opportunities within the Hanford Place Development, as well as the Adventist Health Hospital. The development is located 0.38 miles from the nearest arterial street, 12<sup>th</sup> Avenue.

*Policy L39 Typical Uses in the High-Density Residential Land Use Designation*

Define the uses allowed in the High-Density Residential land use designation to include multi-family residential dwellings in apartment buildings complexes.

Analysis: Multi-family residential dwellings are proposed within an apartment building complex in the development.

*Policy L40 Design of the High-Density Residential Land Use Designation*

Develop and enforce design policies and/or ordinances for High Density Residential developments that ensure high quality construction, design, open space amenities, safety and security, overall compatibility with the rest of the neighborhood.

Analysis: Development of the High-Density Residential land use within the Hanford Place Master Plan will be regulated through compliance with Section 17.14 of the Hanford Municipal Code, except where modified through development standards for the Hanford Place Master Plan.

*Policy L41 Location and Size of the High-Density Residential Land Use Designation*

Locate High Density Residential land use designations in close proximity to Arterial streets, commercial centers, recreational facilities, and employment centers.

Analysis: The High-Density Residential land use designation is proposed to be located along Glendale Avenue, between 11<sup>th</sup> and 12<sup>th</sup> Avenues, both of which are designed arterials. The designation will be located within the Hanford Place Mixed Use development, which provides employment opportunities for medical-related uses. The designation is also proximal to the Adventist Health Hospital, which is a large employment center for the City of Hanford.

The General Plan Amendment to change the land use designation from Highway Commercial to a combination of Service Commercial and High-Density Residential is consistent with the General Plan policy.

Additional Applicable Goals and Policies

**Economic Development and Employment Goals**

***Goal E1: A diverse and robust local economy capable of providing employment for all residents desiring to work in the city.***

Analysis: The proposed Hanford Place supports Goal E1 by providing medical-related employment opportunities for residents desiring to work in the City of Hanford.

***Policy P80 Health Care Services***

Support hospitals, clinics, shelters, and other medical services that meet the health care needs of Hanford's residents.

Analysis: The proposed Hanford Place development supports Policy P80 by supporting medical uses to meet the health care needs of Hanford's residents.

**Growth Management Goals**

***Goal L2: Development preference of vacant and underutilized properties.***

***Goal L3: Limitation of urban sprawl-style development patterns in new growth areas***

***Policy L11 Infill Development***

Support, encourage, and incentivize, to the extent possible, infill development projects that can effectively utilize existing transportation and utility infrastructure.

***Policy L107 Revitalization and Redevelopment***

Encourage property owners to revitalize or redevelop abandoned, obsolete, or underutilized properties to accommodate growth.

An infill development site is defined as any parcel or group of parcels that are vacant or underdeveloped and surrounded by development on at least 75% of its perimeter. Infill sites may include previously developed sites that may/will be redeveloped. Examples include:

- Mixed use development in the Downtown and/or in areas within walking distance to transit, employment centers, and commercial services where the environmental impacts of the development would be minimized.
- Targeted residential infill development that addresses the needs of seniors, lower income households, single households and empty nesters, young professionals, and other special needs groups.

***Policy L135 Infill Development Support***

Support, encourage and, to the extent possible, incentivize infill development projects that can effectively utilize existing transportation and utility infrastructure.

***Policy L137 Creative Design Solutions***

Allow unique, diverse, and creative design solutions for infill development that are compatible with and enhance surrounding land uses.

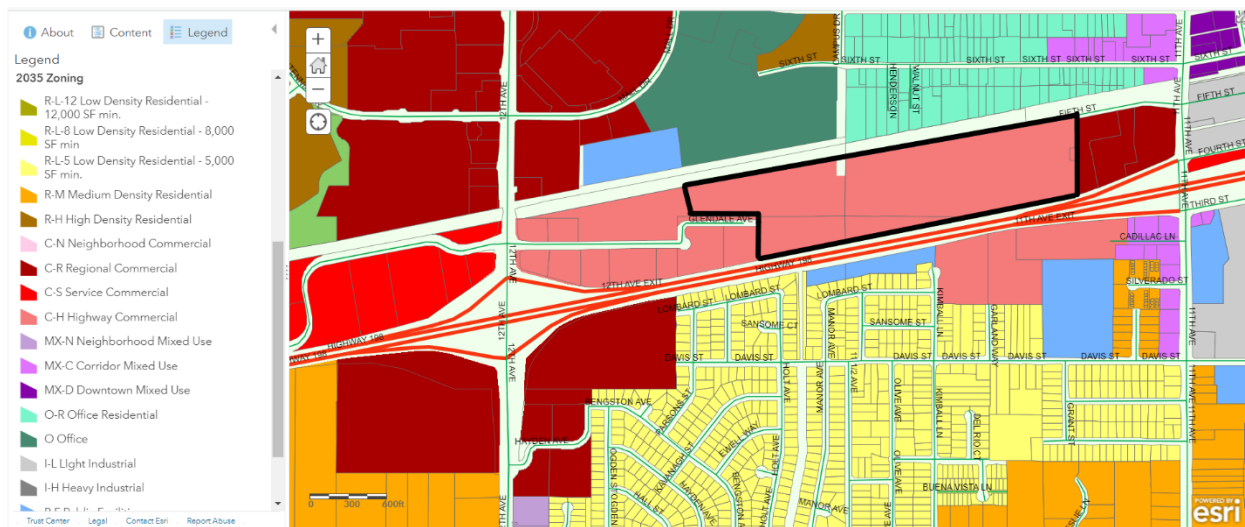


Analysis: The Hanford Place Development represents creative design solution to an in-fill development area. Development of this area gives preference to a vacant, underutilized property and limits growth to a new area. The project provides residential opportunities in proximity to existing and planned employment hubs. The project also proposes infill development that addresses the needs of seniors, such as memory care facilities and assisted living opportunities.

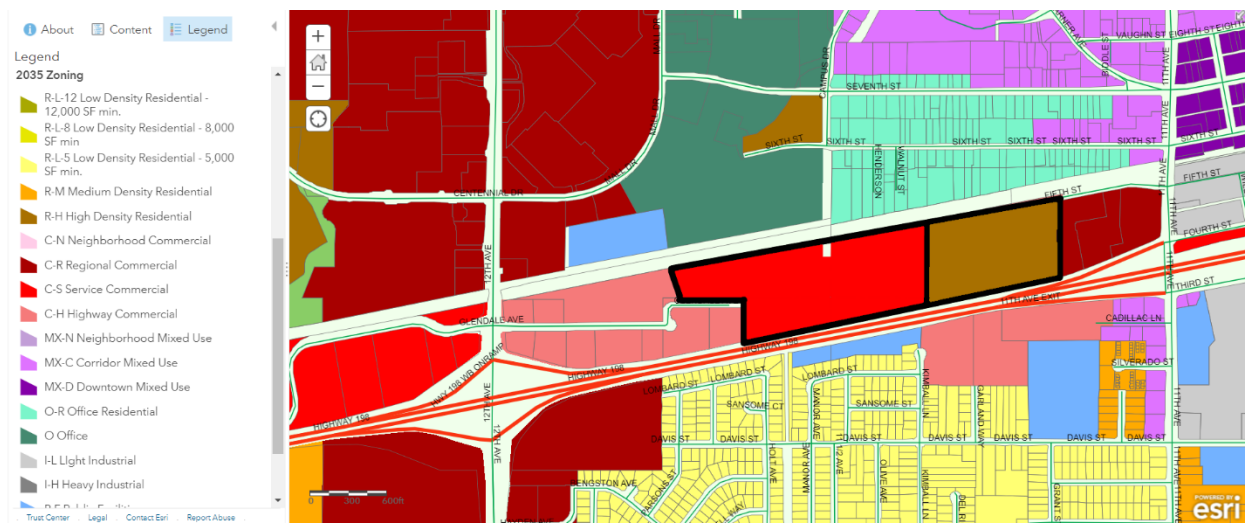
## Rezone No. 2022-01

Rezone No. 2022-01 is a request to change the zoning from C-H Highway Commercial to a combination of C-S Service Commercial and R-H High-Density Residential, due to incompatibility with the Hanford Place Master Plan and the existing C-H Highway Commercial zoning.

**Figure 9: Existing Zoning  
C-H Highway Commercial**



**Figure 10: Proposed Zoning  
C-S Service Commercial and R-H High-Density Residential**



The project is incompatible with the present zoning, since it proposes land uses that are not permitted in the C-H Highway Commercial zone district, including medical and professional offices, urgent care clinics, a nursing college or other satellite campus, and multi-family residential. (See Figures 4-6).

The uses proposed within the Hanford Place Master Plan are permitted in the C-S Service Commercial and R-H High-Density Residential zone district, as demonstrated in the Land Use tables, below.

**Figure 11: Zone Use Table  
Education, Religious, and Assembly Uses**

| Commercial, Office, and Industrial Zone Use Table                                   |                                                                    |                  |     |     |     |                 |      |      |                             |   |     |     |             |    |    |                                                         |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------|------------------|-----|-----|-----|-----------------|------|------|-----------------------------|---|-----|-----|-------------|----|----|---------------------------------------------------------|
| P = Use Is Permitted by Right    C = Use Requires Conditional Use Permit            |                                                                    |                  |     |     |     |                 |      |      |                             |   |     |     |             |    |    |                                                         |
| A = Use Requires Administrative Use Permit    T = Use Requires Temporary Use Permit |                                                                    |                  |     |     |     |                 |      |      |                             |   |     |     |             |    |    |                                                         |
| Blank = Use Is Not Allowed                                                          |                                                                    |                  |     |     |     |                 |      |      |                             |   |     |     |             |    |    |                                                         |
| Land Uses                                                                           |                                                                    | Commercial Zones |     |     |     | Mixed Use Zones |      |      | Industrial and Office Zones |   |     |     | Other Zones |    |    | Specific Land Use Standards<br>(See Identified Section) |
|                                                                                     |                                                                    | C-N              | C-R | C-S | C-H | MX-N            | MX-C | MX-D | O-R                         | O | I-L | I-H | AP          | PF | CO |                                                         |
| C                                                                                   | Education, Religious and Assembly Uses                             |                  |     |     |     |                 |      |      |                             |   |     |     |             |    |    |                                                         |
| C5                                                                                  | College or university, public or private                           |                  | C   | C   |     |                 | C    | C    |                             |   |     |     |             | P  |    |                                                         |
| C13                                                                                 | School; charter, trade, vocational, art, business, or professional |                  | C   | P   |     |                 | C    | C    | C                           | C | C   |     |             | P  |    |                                                         |

**Figure 12: Zone Use Table  
Office and Medical Uses**

| <b>Commercial, Office, and Industrial Zone Use Table</b><br>P = Use Is Permitted by Right    C = Use Requires Conditional Use Permit<br>A = Use Requires Administrative Use Permit    T = Use Requires Temporary Use Permit<br>Blank = Use Is Not Allowed |                                            |                  |     |     |     |                 |      |      |                             |   |     |     |             |    |    |                                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|------------------|-----|-----|-----|-----------------|------|------|-----------------------------|---|-----|-----|-------------|----|----|------------------------------------------------------|
| Land Uses                                                                                                                                                                                                                                                 |                                            | Commercial Zones |     |     |     | Mixed Use Zones |      |      | Industrial and Office Zones |   |     |     | Other Zones |    |    | Specific Land Use Standards (See Identified Section) |
|                                                                                                                                                                                                                                                           |                                            | C-N              | C-R | C-S | C-H | MX-N            | MX-C | MX-D | O-R                         | O | I-L | I-H | AP          | PF | CO |                                                      |
| <b>E</b>                                                                                                                                                                                                                                                  | <b>Office and Medical Uses</b>             |                  |     |     |     |                 |      |      |                             |   |     |     |             |    |    |                                                      |
| E4                                                                                                                                                                                                                                                        | Laboratory; general, medical or dental     |                  | C   | P   | C   |                 | P    | C    |                             | P | C   |     |             |    |    |                                                      |
| E5                                                                                                                                                                                                                                                        | Hospital, general or psychiatric           |                  |     |     |     |                 |      |      |                             | P |     |     |             | P  |    |                                                      |
| E6                                                                                                                                                                                                                                                        | Office; medical, dental, or optometry      |                  |     |     |     |                 |      |      |                             |   |     |     |             |    |    |                                                      |
|                                                                                                                                                                                                                                                           | Under 2,000 sq. ft.                        | P                | P   | P   |     | P               | P    | P    | P                           | P |     |     |             |    |    |                                                      |
|                                                                                                                                                                                                                                                           | 2,000 – 6,000 sq. ft.                      | P                | C   | P   |     | P               | P    | P    | P                           | P |     |     |             |    |    |                                                      |
|                                                                                                                                                                                                                                                           | Over 6,000 sq. ft.                         | P                |     | P   |     | P               | P    | P    | P                           | P |     |     |             |    |    |                                                      |
| E7                                                                                                                                                                                                                                                        | Office; professional or commercial         |                  |     |     |     |                 |      |      |                             |   |     |     |             |    |    |                                                      |
|                                                                                                                                                                                                                                                           | Under 2,000 sq. ft.                        | P                | P   | P   |     | P               | P    | P    | P                           | P |     |     |             |    |    |                                                      |
|                                                                                                                                                                                                                                                           | 2,000 – 6,000 sq. ft.                      | P                | C   | P   |     | P               | P    | P    | P                           | P |     |     |             |    |    |                                                      |
|                                                                                                                                                                                                                                                           | Over 6,000 sq. ft.                         | P                |     | P   |     | P               | P    | P    | P                           | P |     |     |             |    |    |                                                      |
| E8                                                                                                                                                                                                                                                        | Pharmacy                                   | P                | P   | P   |     | P               | P    | P    |                             | P |     |     |             |    |    |                                                      |
| E9                                                                                                                                                                                                                                                        | Urgent care center or other walk-in clinic | P                | C   | C   |     | P               | P    | P    |                             | P |     |     |             |    |    |                                                      |

**Figure 13: Zone Use Table  
Residential Uses**

| <b>Commercial, Office, and Industrial Zone Use Table</b><br>P = Use Is Permitted by Right    C = Use Requires Conditional Use Permit<br>A = Use Requires Administrative Use Permit    T = Use Requires Temporary Use Permit<br>Blank = Use Is Not Allowed |                                                                       |                  |     |     |     |                 |      |      |                             |   |     |     |             |    |    |                                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|------------------|-----|-----|-----|-----------------|------|------|-----------------------------|---|-----|-----|-------------|----|----|------------------------------------------------------|
| Land Uses                                                                                                                                                                                                                                                 |                                                                       | Commercial Zones |     |     |     | Mixed Use Zones |      |      | Industrial and Office Zones |   |     |     | Other Zones |    |    | Specific Land Use Standards (See Identified Section) |
|                                                                                                                                                                                                                                                           |                                                                       | C-N              | C-R | C-S | C-H | MX-N            | MX-C | MX-D | O-R                         | O | I-L | I-H | AP          | PF | CO |                                                      |
| <b>H</b>                                                                                                                                                                                                                                                  | <b>Residential Uses</b>                                               |                  |     |     |     |                 |      |      |                             |   |     |     |             |    |    |                                                      |
| H1                                                                                                                                                                                                                                                        | Assisted living, skilled nursing, or hospice facility                 |                  |     |     |     | C               | C    | C    | C                           |   |     |     |             |    |    |                                                      |
| H6                                                                                                                                                                                                                                                        | Hotel or motel                                                        |                  | C   | C   | P   |                 | P    | P    |                             |   |     |     |             |    |    |                                                      |
| H7                                                                                                                                                                                                                                                        | Live/work facility                                                    |                  |     | P   |     | P               | P    | P    | P                           |   |     |     |             |    |    |                                                      |
| H8                                                                                                                                                                                                                                                        | Mobile home park                                                      |                  |     |     |     |                 |      |      |                             |   |     |     |             |    |    | 17.60.100                                            |
| H9                                                                                                                                                                                                                                                        | Multifamily dwelling, 2 units per building (duplex)                   |                  |     |     |     | P               | P    | P    | P                           |   |     |     |             |    |    |                                                      |
| H10                                                                                                                                                                                                                                                       | Multifamily dwelling, 3 or 4 units per building (triplex or fourplex) |                  |     |     |     | P               | P    | P    | C                           |   |     |     |             |    |    |                                                      |
| H11                                                                                                                                                                                                                                                       | Multifamily dwelling, 5 or more units per building                    |                  |     |     |     | P               | P    | P    |                             |   |     |     |             |    |    |                                                      |

**Figure 14: Residential Zone Use Table**

| <b>Residential Zone Use Table</b><br>P = Use Is Permitted by Right    C = Use Requires Conditional Use Permit<br>A = Use Requires Administrative Use Permit    T = Use Requires Temporary Use Permit<br>Blank = Use Is Not Allowed |                                                                       |                                 |       |       |                               |     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|---------------------------------|-------|-------|-------------------------------|-----|
| Land Uses                                                                                                                                                                                                                          |                                                                       | Single-Family Residential Zones |       |       | Multifamily Residential Zones |     |
|                                                                                                                                                                                                                                    |                                                                       | R-L-12                          | R-L-8 | R-L-5 | R-M                           | R-H |
| <b>1</b>                                                                                                                                                                                                                           | <b>Residential Uses</b>                                               |                                 |       |       |                               |     |
| 1                                                                                                                                                                                                                                  | Assisted living, skilled nursing, or hospice facility                 | C                               | C     | C     | C                             | C   |
| 10                                                                                                                                                                                                                                 | Multifamily dwelling, 2 units per building (duplex)                   |                                 |       | C     | P                             | P   |
| 11                                                                                                                                                                                                                                 | Multifamily dwelling, 3 or 4 units per building (triplex or fourplex) |                                 |       | C     | P                             | P   |
| 12                                                                                                                                                                                                                                 | Multifamily dwelling, 5 or more units per building                    |                                 |       |       | P                             | P   |

Pursuant to HMC 17.06.060 Zone Changes, changes to the zoning map shall be approved by ordinance of the City Council, in accordance with Chapter 17.86. Chapter 17.86 of the Municipal Code describes the process for consideration of a Rezone. The reviewing authority is required to make the required findings below:

1. That the amendment is internally consistent with the goals, objectives, and policies of the General Plan and the Municipal Code.

Analysis: That Rezone No. 2022-01 is internally consistent with the goals, objectives, and policies of the General Plan, specifically consistent with Goals E1, L2, and L3, and Policies L38-41, L51-55, L11, L107, L135, L137 and P80 (as described in the General Plan Amendment section, above). All regulations pertaining to C-S – Service Commercial and R-H High-Density Residential zone district will be enforced as development occurs through the Site Plan Review process, except as expressly modified by the Hanford Place Development Master Plan.

2. The amendment would not be detrimental to the public health, safety, or welfare of the community.

Analysis: That this application has been reviewed by County departments, utility companies, City Fire Department, City Building Department, and other involved departments. Any mitigation required for public health and safety were applied to the proposal and required in the mitigation monitoring and reporting program.

3. The amendment would maintain the appropriate balance of land uses within the City.

Analysis: That jobs-housing balance is achieved by increasing opportunities for people to work and live in close proximity. The ratio is expressed as the number of jobs divided by the number of housing units. The jobs-housing balance is a general tool for analyzing where people work, where they live, and how effectively they can travel between the two. In the planning area, the jobs-housing balance ratio in 2013-2014 was 1.17. It is estimated that the implementation of the General Plan would increase the jobs-housing balance by 0.45 to 1.62, which would make the planning area a jobs-rich area. The proposal to change the designation from Highway Commercial to a combination of Service Commercial and High-Density Residential will impact the job-housing balance projected by increasing the number of residential units in the area. The addition of the residential units to the formerly commercial designation will not affect the City's ability to maintain an appropriate balance of land uses within the City, as the increase in housing will bring more residential units to the jobs-rich planning area.

4. The anticipated land uses on the subject site would be compatible with existing and future surrounding uses.

Analysis: That the Hanford Place Master Plan proposes the development of a medical and mixed-use development on property proposed to be zoned C-S Service Commercial and R-H High-Density Residential. The land uses within the Hanford Place development are compatible with the surrounding land uses and compatible with future surrounding lands uses.

| Direction | Existing Land Use                                                    | General Plan Designation                                | Zone District                                                             |
|-----------|----------------------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------------------------|
| North     | Railroad; Adventist Health Medical Center; single-family residential | Office; Office Residential                              | O Office; O-R Office Residential                                          |
| South     | CA-198; car dealership; basin; single-family residential             | Highway Commercial, Open Space, Low-Density Residential | C-H Highway Commercial, PF Public Facility, R-L-5 Low-Density Residential |
| East      | Integrate shopping center – grocery, retail, gym, restaurant         | Regional Commercial                                     | C-R Regional Commercial                                                   |

|      |                                                                     |                    |                        |
|------|---------------------------------------------------------------------|--------------------|------------------------|
| West | Veterinary hospital, mini-storage, California Highway Patrol, hotel | Highway Commercial | C-H Highway Commercial |
|------|---------------------------------------------------------------------|--------------------|------------------------|

The project will be developed in conformance with the C-S Service Commercial and R-H High-Density Residential zone district regulations, except where expressly modified by the Hanford Place Master Plan (PUD).

### **Planned Unit Development No. 2023-01**

Planned Unit Development No. 2023-01 proposes the development of the Hanford Place Master Plan. The proposed Hanford Place Master Plan is attached as **Attachment 1**.

Planned Unit Development

#### **17.82.010 Purpose**

Planned unit developments (PUDs) are encouraged to achieve a more functional, aesthetically pleasing, and harmonious living and working environment within the City that otherwise might not be possible by strict adherence to the provisions of this title. In certain instances, the objectives of this title may be achieved by development that does not conform in all respects with the land use pattern designated on the zoning map or in the zone districts prescribed by this title.

#### **17.82.030 Allowed Planned Unit Developments**

A planned unit development may be utilized to achieve one (1) or more of the following objectives *(the objectives sought by this PUD application are denoted by a check mark)*

- ✓ A. To permit a site within more than one (1) zone district to mix the permitted or conditionally permitted land uses of both zones within the site without regard to the zone district boundary.
- B. To permit development intensity greater than would otherwise be permitted by the implementation of the standards of the zone district in which the site is located.
- ✓ C. To permit the lot patterns on size, shape, and layout that would otherwise not be permitted by the standards of the zone district in which the site is located.
- ✓ D. To modify the required building setbacks, distances between structures, and landscaped areas that would otherwise be required by this title.
- E. To permit variations to the standard local street cross-sections.
- F. To permit private streets and gated neighborhoods.
- G. To permit the implementation of the mixed-use provisions in the MX-N, MX-C, or MX-D zone districts; and
- ✓ To reduce the amount of required parking spaces when spaces are shared among multiple land uses.

#### **17.82.040 Prohibited Planned Unit Developments**

A planned unit development is prohibited from being used to achieve one (1) or more of the following:

- A. To add land uses that are not otherwise permitted in the zone district in which the PUD is located.

Analysis: With the proposal to change the land use designation and zoning from C-H Highway Commercial to C-S Service Commercial and R-H High-Density Residential, the Master Plan does not propose to add land uses that are not otherwise permitted in the zone district in which the PUD will be located. All uses proposed are consistent with the uses permitted in the C-S Service Commercial and R-H High-Density Residential land use.

- B. To increase residential densities beyond the maximum allowed by the General Plan.

Analysis: The residential densities proposed within the Hanford Place Master Plan are consistent with the allowable density in the High-Density Residential land use designation, which is the land use sought through General Plan Amendment No. 2022-01.

- C. To modify sign standards or provisions in Chapter 17.56; or

Analysis: The applicant proposes to develop a Sign Program, consistent with the standards set forth in 17.56.220.

- D. To modify parking and loading standards or provisions in Chapter 17.54, except as stated in Section 17.82.030.

Analysis: Parking is proposed as follows within the Hanford Place Master Plan:

- a. motel or hotel - 1 space per guest room plus 1 space per employee.
- b. assisted living, skilled nursing facility, or hospice - 1 space for every 4 beds.
- c. multifamily dwellings - at least 50% of spaces shall be covered.
  - i. one-bedroom - 1.5 spaces per dwelling unit
  - ii. two-bedroom - 1.75 spaces per dwelling unit
  - iii. three or more bedrooms - 2 spaces per dwelling unit
- d. all other allowed uses - 1 space per 350 square feet of building space.

The Hanford Place Master Plan does not seek to allow any of the specified prohibited objectives.

#### **17.82.050 Site Area**

- A. The minimum site area for a planned unit development shall be five (5) acres, except that there shall be no minimum site area requirements if the site is an infill development site.
- B. The site area may be made up of more than one (1) parcel, however all parcels in the site area shall be contiguous.

Analysis: The Hanford Place Master Plan encompasses 39.16 acres.

#### **17.82.060 Findings**

- A. Before a planned unit development (PUD) permit can be approved, all of the following findings shall be made by the reviewing authority identified in Chapter 17.70:
1. The location and design of the PUD is in accordance with the purpose of this title.
  2. The PUD is being proposed to achieve one (1) or more of the objectives identified in Section 17.82.030.
  3. The location and design of the PUD and the conditions under which it would be operated or maintained will not be detrimental to the public health, safety or welfare of the community to properties or improvements in the vicinity.
  4. The location and design of the PUD will not generate more traffic than the streets in the vicinity can carry without congestion and will not overload utilities.
  5. That PUD's population density, site area and dimensions, site coverage, yard spaces, height of structures, distances between structures, off-street parking and off-street loading facilities, landscaped areas and street design will produce an environment of stable and desirable character consistent with the purpose of this title.
  6. The combination of different dwelling types, architectural appearance, and/or varieties of land uses in the development will complement each other and will harmonize with the existing and proposed land uses in the vicinity; and
- B. A PUD may be denied if the reviewing authority finds one (1) or more of the findings in this section cannot be made.

Analysis: The required findings are able to be supported, as demonstrated in the Findings of Approval section.

Conformance with the standards of the C-S – Service Commercial and R-H High-Density Residential Zone Districts

**17.20.030 Service Commercial Site Area**

In the C-S – Service Commercial zone district, the minimum site area shall be 5,000 square feet.

**17.14.030 High-Density Residential Lot Area**

In the R-H High-Density Residential zone district, the minimum lot area shall be 5,000 square feet, however existing lots of less than 5,000 square feet may be developed in accordance with the specifications of Section 17.14.

**Analysis:** The project site encompasses a total of 39.16 acres. The C-S Service Commercial portion of the development is 25.9 acres. The R-H High-Density Residential portion of the development is approximately 10 acres. *The remaining acreage represents right-of-way dedication.*

**17.20.040 Service Commercial Lot Dimensions**



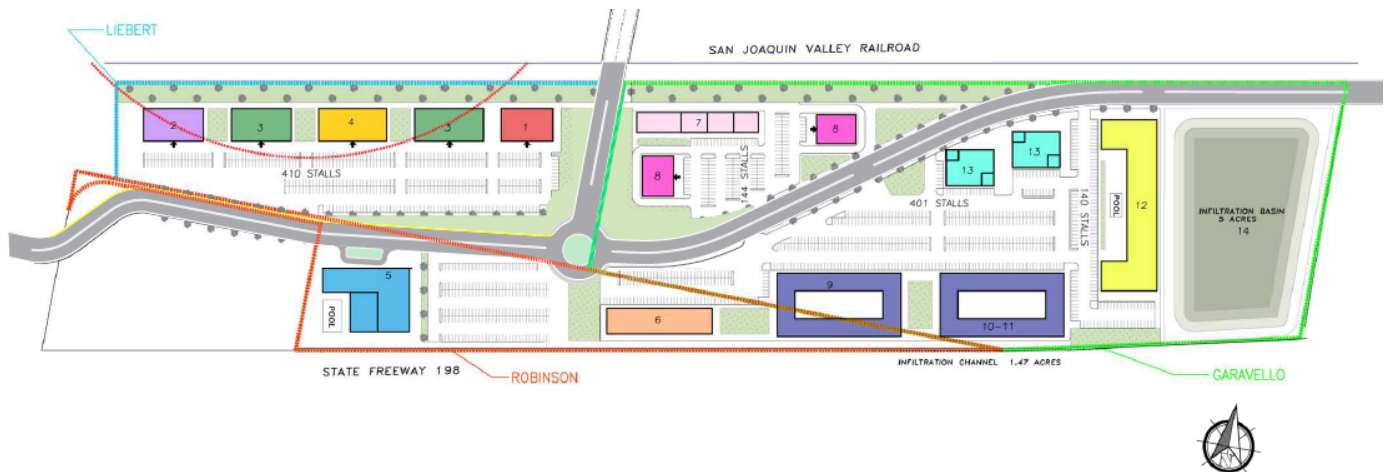
In the C-S – Service Commercial zone district, the minimum lot frontage shall be forty (40) feet, unless a reciprocal use agreement for shared common access and parking areas is recorded with the Kings County recorder's office.

#### 17.14.040 High-Density Residential Lot Dimensions

In the R-H High-Density Residential zone district:

- A. The minimum lot frontage shall be forty (40) feet.
- B. The minimum lot width shall be fifty (50) feet for interior lots and sixty (60) feet for corner lots.
- C. The minimum lot depth shall be ninety (90) feet.
- D. Lots developed adjacent to an arterial or collector street are to be designed as walled or fenced back-on or side-on lots with a minimum five (5) and maximum ten (10) foot wide landscape easement continuous and adjacent to the street right-of-way line. The minimum lot dimensions are to be exclusive of the landscape easement area. The wall or fence shall be located in the landscape easement area adjacent to the easement line.

**Analysis:** The entire project site is formed by four parcels. Each parcel will have street frontage when Glendale Avenue and Campus Drive are extended, as shown below.



The Hanford Place Master Plan shows future pad development; however, parcel division is not proposed at this time. Future division will be evaluated through the Tentative Parcel Map process, subject to Planning Commission review.

#### 17.14.050 High-Density Residential Site Area Per Dwelling Unit

In the R-H High-Density Residential zone district, the minimum site area per dwelling unit shall be fifteen hundred (1,500) square feet. 170 multi-family units are proposed throughout the Hanford Place Master Planned Development. The 170 units are a combination of multi-family units, assisted living units, and a memory care facility. The entire Hanford Place Master Plan encompasses 39.16 acres (1,705,810 square feet). The number of units proposed does not exceed the square footage required per unit.

The Hanford Place Master Plan is conceptual. Future development of residential units will be evaluated to ensure the number of units per site area does not exceed the prescribed requirement.

#### **17.20.050 Service Commercial Coverage**

In the C-S – Service Commercial zone district, the maximum coverage of a lot shall be determined by the combined building setback area requirements, open space requirements, and off-street parking and loading requirements.

#### **17.14.060 High-Density Residential Coverage**

In the R-H High-Density Residential zone district, the maximum coverage of a lot shall be determined by the combined building setback area requirements, accessory structure limitations, open space requirements, and off-street parking requirements.

All required building setbacks, landscaping, off-street parking and loading requirements will be evaluated and mandated as part of the site plan review process, upon physical development.

#### **17.20.060 Service Commercial Building Setback Areas**

In the C-S – Service Commercial zone district, no structure shall be placed within a building setback area.

Front:

The front building setback area shall be a minimum of 15 feet, except that in C-S zones bounded by State Route 198, 10th Avenue, 11th Avenue, and Sixth Street there is no minimum front building setback area requirement. The project site is bounded by State Route 198 to the south.

Rear:

The rear building setback may be zero (0) feet from the rear lot line, except where the rear lot line abuts a public street in an R-L, R-M, R-H, OR, O, PF, AP, or CO zone district then the rear building setback shall be fifteen (15) feet.

Side:

The side building setback area shall be zero (0) feet, except that where the side lot line abuts a public street or an R-L, R-M, R-H, OR, O, PF, AP, or CO zone districts the side building setback area shall be 15 feet.

#### **17.14.070 High-Density Residential Building Setback Areas**

In the R-H High-Density Residential zone district, no structure shall be placed within a building setback area.

Front:

The front building setback area shall be fifteen (15) feet from the front lot line for livable building space and twenty (20) feet for garages, carports, and other non-livable building space.

Rear:

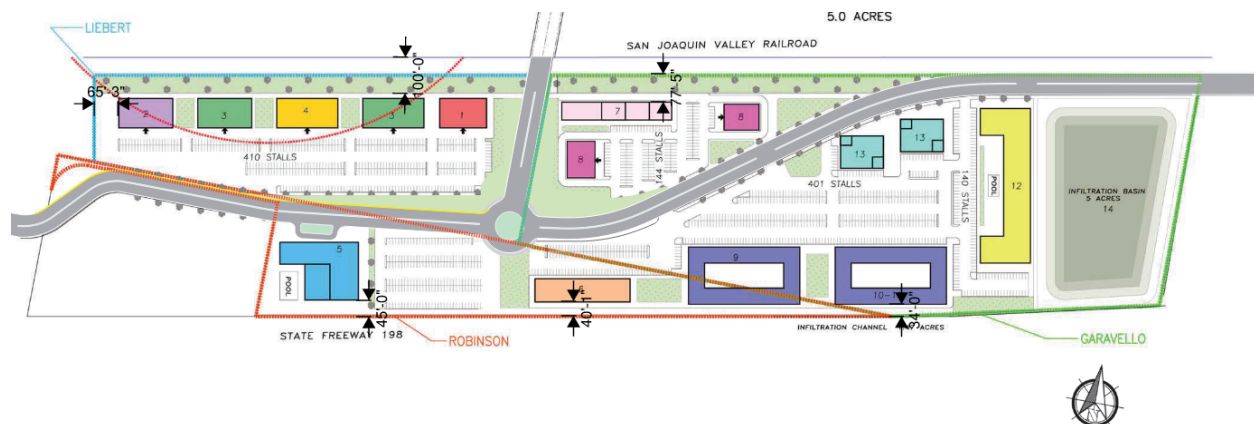
The rear building setback shall be fifteen (15) feet from the rear lot line, except where there is a landscape easement with a wall or fence on the rear of the lot then the rear building setback shall be twenty (20) feet. The rear building setback area shall be increased by ten (10) feet for buildings over one story high.

Side:

The side building setback area shall be five (5) feet from an interior side lot line and ten (10) feet from a street side property line. Where there is a landscape easement with a wall or fence on the street side of the lot the side yard setback area shall be measured from the easement area instead of the side lot line.

**Analysis:** As part of the Hanford Place Master Plan, project-specific setbacks have been identified in the Design Conditions (p. 5 of the Master Plan), as follows:

- Additional building setbacks are not required between the two zones within the PUD plan area. The C-S zone required setbacks shall apply to the entire PUD plan area.



The conceptual site plan shown in the Hanford Place Master Plan shows buildings setback approximately 77 feet from the northern most property boundary, 65 feet from the western property boundary, and a minimum of 34 feet from the southern property boundary.

The following setbacks will be enforced during Site Plan Review for the Hanford Place Master Plan

| Direction           | Setback (measured in feet)                                  |
|---------------------|-------------------------------------------------------------|
| Front Setback       | 15 feet; No minimum for lots bounded by State Route 198 (0) |
| Rear Setback        | No minimum required (0)                                     |
| Side Setback        | No minimum required (0)                                     |
| Street-Side Setback | 15 feet                                                     |

#### 17.20.070 Service Commercial Distances Between Structures

In the C-S – Service Commercial zone district, the minimum distance between a structure used solely for residential purposes and another structure shall be 10 feet, except as provided by the building code.

#### **17.14.080 High-Density Residential Distances Between Structures**

In the R-H High-Density Residential zone district, the minimum distance between structures shall be ten (10) feet, except as provided by the building code.

**Analysis:** As required, the minimum distance between structures within the Hanford Place Master Plan will be 10 feet, except as provided by building code.

#### **17.20.080 Service Commercial Height of Structures**

In the C-S – Service Commercial zone district, the maximum structure height shall be 50 feet.

#### **17.14.090 High-Density Residential Height of Structures.**

The maximum structure height shall be thirty-five (35) feet.

**Analysis:** As part of the Hanford Place Master Plan, project-specific height limitations have been identified in the Design Conditions (p. 5 of the Master Plan), as follows:

- The maximum building height for the PUD area shall be per the C-S zone, which is 50 feet.

The requested height is able to be supported. There is no conflict with the height proposed and the Airport Land Use Compatibility Plan, as the project area is located outside of the Airport Protection Zone.

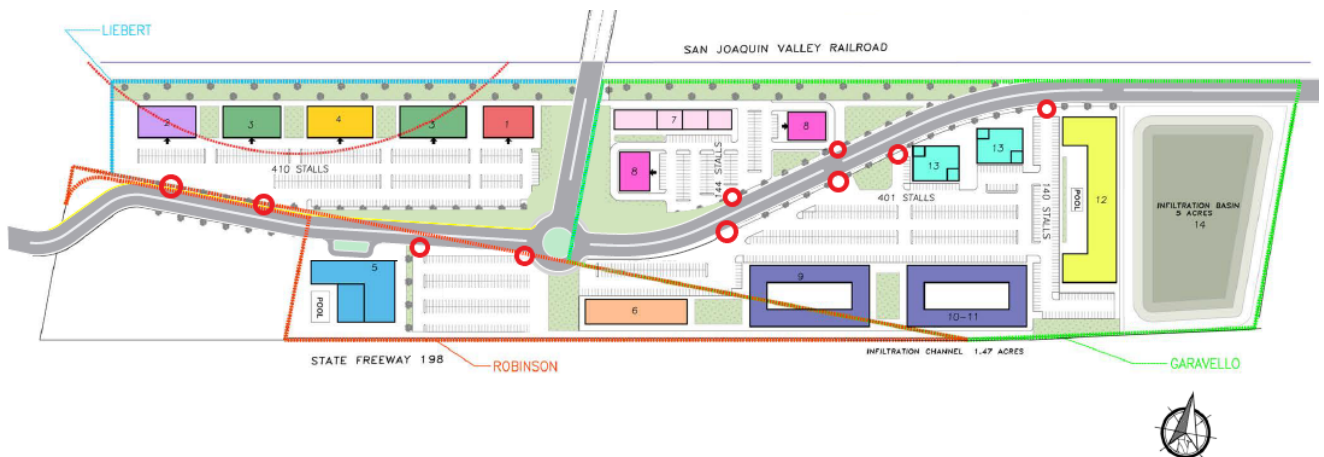
#### **17.20.090 Service Commercial Driveways**

In the C-S – Service Commercial zone district, wherever possible developments shall share driveways to minimize the number of driveways on public streets. New driveways near street corners shall be located a minimum 100 feet from the radius curve of the curb, unless otherwise specifically approved by the City Engineer. Sites with alleys should utilize alley access to minimize driveways on streets to the greatest extent possible.

#### **17.14.100 High-Density Residential Driveways**

In the R-H High-Density Residential zone district, the width of a driveway and any paved area shall not cumulatively exceed forty percent (40%) of the width of the lot's street frontage on which the driveway and any paved area faces. In the case of "L" or "U" shaped driveways or other configurations besides perpendicular driveways the paved area of these driveways shall not exceed fifty percent (50%) of the front building setback area. On corner lots, the driveway shall be located on the side of the lot adjacent to the interior lot line. On key lots the driveway shall be located on the side of the lot which is not adjacent to the rear lot line of the adjacent reverse corner lot.

**Analysis:** The Hanford Place Master Plan proposes to develop shared driveways and establish cross-access throughout the Master Planned development. Access will be generally located as shown in red, below:



The location of driveways will be proposed and reviewed by the City Engineer and Fire Department during Site Plan Review when physical, site-specific development is proposed.

#### 17.20.100 Service Commercial Off-Street Parking

Off-street parking and off-street loading facilities shall be provided on the site for each use as prescribed in Chapter 17.54. In the C-S Service Commercial zone district, parking areas shall not be closer than five (5) feet to any front or street side lot line. The area between the lot line and parking area shall be landscaped. New parking areas should be located behind or to the side of buildings, not between buildings and the street.

#### 17.14.130 High-Density Residential Off-Street Parking

In the R-H High-Density Residential zone district, off-street parking and off-street loading facilities shall be provided on the site for each use as prescribed in Chapter 17.54, and as follows:

- A. Required parking spaces may not be provided in any front, side, or rear building setback area.
- B. The minimum parking space dimensions shall be nine (9) feet wide by eighteen and one-half (18.5) feet long.
- C. No recreation vehicle, including without limitation camping trailer, boat trailer, utility trailer, boat, pickup camper, motor home, dune buggy, or similar vehicle/trailer shall be stored or parked, except within an enclosed side or rear yard or within a garage or carport except if a side or rear yard is not accessible due to existing legal permanent structures, a recreational vehicle or trailer may be parked in a driveway or adjacent to a driveway if it does not create a nuisance or safety problem as determined by the Community Development Director.
- D. All recreational vehicles or trailers parked in a location visible from the street are to be clean and maintained so as not to detract from the neighborhood. Also, see Chapter 10.76 of the Hanford Municipal Code.

- E. No recreational vehicle or trailer shall be used as a residence.
- F. All motor vehicles incapable of movement under their own power, other than in cases of emergency, shall be stored in an entirely enclosed space, garage, or carport. Vehicles with custom fitted covers may be stored in an open area when it does not create a nuisance or safety problem as determined by the Community Development Director, cause complaints from neighbors or violate any section of this code.
- G. Repair of vehicles owned by the resident of the property and storage of parts shall be within an enclosed garage or carport, if no garage exists. Repair of vehicles not owned by the resident of the property is prohibited. Vehicle repair and storage of parts are prohibited in a driveway and the front or street side building setback areas.
- H. Garages and carports are to be primarily used for the parking of four-wheeled vehicles. The use of garages or carports for general storage, recreation activities or other uses that prevent the use of the garage or carport for the parking of at least one four-wheeled vehicle is prohibited.
- I. Except for driveways allowed in the front building setback area, all additional parking for residential uses shall be to the rear or side of the dwelling. No parking shall occur in the front or street side building setback areas.

Analysis: The Hanford Place Master Plan proposes parking to adhere to the following prescribed ratios:

- a. motel or hotel - 1 space per guest room plus 1 space per employee.
- b. assisted living, skilled nursing facility, or hospice - 1 space for every 4 beds.
- c. multifamily dwellings - at least 50% of spaces shall be covered.
  - i. one-bedroom - 1.5 spaces per dwelling unit
  - ii. two-bedroom - 1.75 spaces per dwelling unit
  - iii. three or more bedrooms - 2 spaces per dwelling unit
- d. all other allowed uses - 1 space per 350 square feet of building space.

Parking will be required to be located outside of any required setback area, at a minimum of five feet from any front or street-side lot line. Although the C-S Service Commercial zone district specifies that parking shall not be located between buildings and the street, this is not required within the Hanford Place Master Plan. A deviation will be allowed through the Planned Unit Development process.

Parking will be further evaluated during the site plan review process to ensure compliance with the requirements set forth.

#### **17.20.110 Service Commercial Usable Open Space**

There is no minimum requirement for usable open space in the C-S – Service Commercial zone district.

#### **17.14.140 High-Density Residential Usable Open Space**

In the R-H High-Density Residential zone district, lots with four (4) or less dwelling units shall provide for a usable open space area of a minimum three hundred (300) square feet per dwelling unit. The open space shall be a minimum fifteen (15) feet wide. Lots with five (5) or more dwelling units shall provide for a usable open space area equal to five percent (5%) of the lot area. Where multiple lots that together make up a single development site, the required open space may be combined into common open space areas that are accessible to all residents of the site.

**Analysis:** Per the conceptual site plan provided within the Master Plan, a swimming pool is proposed to serve as the common open space in the multi-family development. Swimming pools are permitted as common open space, as described in Section 17.98.020 Definition of Terms.

“Open space, common usable” means recreational or leisure space for the shared use of residents of a multi-unit development with no dimension less than twenty (20) feet and may include gardens, playgrounds, courtyards, swimming pools, sitting areas, court games, recreation rooms, exercise rooms or gyms, spas, community rooms, lawn/turf used for open play, ponds, fountains, atriums, picnic areas, rooftop gardens or green roofs, or similar uses or facilities.

Open space will be required to be provided in an area equivalent to five percent of the total site area associated with the multi-family use. Open space is not required to be provided within the C-S Service Commercial portion of the plan.

#### **17.14.110 High-Density Residential Accessory Structures**

In accordance with the R-H High-Density Residential zone district standards, accessory structures may be located with a required rear or side building setback area subject to all of the following:

- A. The floor area shall be a maximum one hundred twenty (120) square feet.
- B. The walls shall be at least three (3) feet from rear and side lot lines.
- C. The roof eaves shall be at least two (2) feet from rear and side lot lines.
- D. The accessory structure shall be separated from other structures by a minimum of ten (10) feet.
- E. The plate line height shall be a maximum seven (7) feet high.
- F. The roof pitch shall be a maximum 4:12.
- G. The roof ridge peak height shall be a maximum of ten (10) feet.

**Analysis:** Accessory structures are not proposed at this time; future proposal of accessory structures will be required to adhere to the above standards within the R-H High-Density Residential portion of the plan.

#### **17.14.120 High-Density Residential Other Setback Standards**

The following setback standards shall apply to mechanical equipment, garages and carports, swimming pools, decks, balconies, and other types of platforms.

- A. Mechanical equipment shall be located a minimum of five (5) feet from a side lot line that adjoins a neighboring side lot line.
- B. Garages or carports opening onto an alley shall be set back twenty-five (25) feet from the far side of the alley, provided that the structure, including roof overhang, shall not extend into the alley right-of-way. (No alleys proposed within the development)
- C. Above or below ground swimming pools shall be set back five (5) feet from all lot lines.
- D. Decks, balconies, and other types of platforms with a floor height over two (2) feet high shall be set back five (5) feet from the rear and interior side lot lines and ten (10) feet from the street side lot line.
- E. Garages and carports opening on the street side lot line of a corner lot shall be set back twenty (20) feet from the street side lot line. (Ord. 17-04, 2017)

**Analysis:** Mechanical equipment, garages and carports, swimming pools, decks, balconies and other platforms will be evaluated and required to adhere to the above standards within the R-H High-Density Residential portion of the Master Plan area.

#### **17.20.120 Service Commercial Landscaping**

In the C-S – Service Commercial zone district, landscaping shall be provided and permanently maintained in a setback area not less than 15 feet from a lot line adjoining a street, except where the setback area is covered by structures, parking, or driveways.

#### **17.14.150 High-Density Residential Landscaping**

In the R-H High-Density Residential zone district, except for driveways and approved parking areas all yard areas and setback areas visible from the street(s) shall be landscaped with live plant materials and ornamentation common to the Hanford Area or up to 100 percent of the yard and setback area may be landscaped with artificial turf and other permeable surfaces.

**Analysis:** The conceptual site plan within the Master Plan shows landscape areas within all areas not used for parking, structures, or driveways and specifies that landscaping design shall be consistent between the sites in the PUD plan area. As required, during the site plan review process, the Site Plan Review Committee will require all areas not covered by structures, parking, or driveway shall be landscaped with live plant material, artificial turf, or other permeable surfaces, consistent with State law.

#### **17.20.130 Service Commercial Screening, Fences, and Walls**

In the C-S – Service Commercial zone district, a block wall with a minimum height of seven (7) feet shall be provided along any side or rear lot line that abuts an R-L, R-M, R-H, OR, PF, AP, or CO zone district. No fence or wall shall be placed in front of or within any landscaped area located next to a street.

#### **17.14.160 High-Density Residential Screening, Fences, and Walls**



In the R-H High-Density Residential zone district, all fences and walls shall be provided on the site for each use in accordance with Section 17.50.120, which requires:

Fences and walls in the R-L, R-M, R-H, OR O and PF zone districts shall be constructed or installed in accordance with the following:

- A. Along a rear lot line not exceeding seven (7) feet in height.
- B. Along an interior side lot line not exceeding seven (7) feet in height beginning at ten (10) feet from the front lot line.
- C. On a corner lot along the street side lot line not exceeding seven (7) feet in height beginning at twenty-five (25) feet from the front lot line. On a reverse corner lot, the fence or wall is to be set back from the street side lot line five (5) feet. On a reverse corner lot, the rear lot line fence is not to extend beyond the five (5) foot street side building setback area.
- D. On a corner lot when a residence is constructed with its front access facing the street side lot line of a corner lot, a six (6) foot high fence is to be placed ten (10) feet behind the front property line. The street corner forty-five (45) degree angle line of sight is to be maintained as described in subsection H of this section. When the front of the house fronts the street side lot line a fence exceeding three (3) or four (4) feet in height as described in subsections E and F of this section is to be set back ten (10) feet from the street side lot line.
- E. Along a front lot line not exceeding three (3) feet in height.
- F. Along a front lot line not exceeding four (4) feet in height when the upper one (1) foot is fifty percent (50%) or more open.
- G. Along a front lot line an open chain link fence up to seven (7) feet in height may be located in conjunction with a public or quasi-public playground or park use.
- H. A six (6) foot fence or wall may be located in a front building setback area when set back ten (10) feet from the front lot line. Except in the case of a corner lot, the fence wall shall begin a forty-five (45) degree angle at a point twenty-five (25) feet from the front lot line located on the street side lot line.

**Analysis:** As identified in the initial study, six-and-a-half foot-high sound walls would mitigate noise impacts for outdoor uses, such as the swimming pools within the hotel and multi-family units. Aside from the sound walls proposed to reduce noise impacts, fencing and walls are not proposed within the Hanford Place Master Plan.

As part of the Hanford Place Master Plan, project-specific fencing and walls have been identified in the Design Conditions (p. 5 of the Master Plan), as follows:

- A block wall is not required within the PUD plan area between the zones.

Requests for placement of walls will be reviewed and required as part of the Site Plan Review process.

#### **17.20.140 Service Commercial Signs**

Signs placed in the C-S – Service Commercial zone district shall be subject to the requirements and standards prescribed in Chapter 17.56.

#### **17.14.170 High-Density Residential Signs**

Signs placed in the R-H High-Density Residential zone district shall be subject to the requirements and standards prescribed in Chapter 17.56.

**Analysis:** No signage is proposed at this time. The applicant proposes the development of a Master Sign Program for the Hanford Place Master Plan area, as described in the Design Conditions (p. 5 of the Master Plan):

- A sign program shall be established prior to building permit approval for the first office or commercial use. The sign program would not apply to residential, and hotel/motel uses, which would follow sign standards in the Zoning Ordinance.

Establishment of a sign program for a project requiring Planning Commission review, requires approval by the Planning Commission, as described in Section 17.56.220 of the Hanford Municipal Code:

#### **17.56.220 Master Sign Program**

- A. The purpose of the master sign program provisions is to provide a coordinated and flexible design approach to signage for Hanford's commercial shopping districts and office parks. A master sign program is required for any site that contains more than three (3) commercial establishments.
- B. A master sign program shall be reviewed by the Community Development Director as an administrative use permit. The Planning Commission shall approve a master sign program when it is proposed with a development project that requires a conditional use permit.
- C. A master sign program shall not be used to grant of a special privilege nor provide more visibility or exposure than is available to similarly situated properties.
- D. Master sign programs shall feature a unified and coordinated approach to the materials, color, size, type, placement and general design of signs proposed for a project or property.
- E. Reasonable conditions of approval may be imposed to achieve the purposes of this section and ensure internal sign design consistency on the site.
- F. After approval of a master sign program, no sign shall be erected, placed, painted, or maintained, except in conformance with such program, and such program shall be enforced in the same way as any provision in this section.
- G. The master sign program and all conditions of approval shall be attached to the lease agreements for all leasable space subject to the master sign program.

- H. Approval of a master sign program does not waive the permit requirements for individual signs that are subject to the program.
- I. The Community Development Director may approve minor amendments to a master sign program that are in substantial conformance with the original approval. All other amendments, including amendments to conditions of approval, shall be processed as a new application. Proposed amendments shall include written concurrence by the property owner.

The Master Sign Program will apply to all uses in the C-S Service Commercial portion of the plan, except for the hotel.

The hotel will be subject to the following sign standards, established by the Municipal Code for the C-S Service Commercial zone district.

**Table [17.56.090\(A\)](#)**

| <b>Number and Size of Permanent Signs by Zone</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Zone District</b>                              | <b>Building Signs</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>Freestanding Signs</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| C-N, C-R, C-S, C-H, MX-N, MX-C, and O zones       | <p>No limit to number of signs per business establishment. Allowed square footage per building frontage is cumulative.</p> <p>Establishments with primary building frontage less than 300 feet: 2 sq. ft. per 1 lineal foot up to a maximum 350 sq. ft. along primary frontage. 50 sq. ft. allowed regardless of frontage length.</p> <p>Secondary building frontage: 1 sq. ft. per lineal foot up to a maximum 200 sq. ft. per secondary frontage. 35 sq. ft. allowed regardless of frontage length.</p> <p>Sites within 100 feet of State Route 198 may count the frontage facing State Route 198 as their primary frontage for the purpose of calculating maximum sign size.</p> | <p>1 sign per establishment maximum.</p> <p>40 sq. ft. maximum sign face size.</p> <p>6 feet high maximum if set back 10 feet from property line.</p> <p>5 feet high maximum if set back 5 feet from property line.</p> <p>4 feet high maximum if set back 0 feet from property line.</p> <p>Sites with an integrated shopping center: 1 additional freestanding sign up to 350 sq. ft. Maximum height not greater than 1.5 times the average height of the building.</p> |

The uses proposed within the R-H High-Density Residential portion of the plan will be subject to the following sign standards, established by the Municipal Code:

Table [17.56.090\(A\)](#)

| Number and Size of Permanent Signs by Zone                                                     |                                                                                                                                                       |                                                                                                             |
|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| Zone District                                                                                  | Building Signs                                                                                                                                        | Freestanding Signs                                                                                          |
| AP, R-L, R-M, and R-H zones with 4 or less residences per site                                 | 1 sign per residence maximum.<br>4 sq. ft. maximum size per sign.<br>Placement a maximum 8 feet high.<br>External illumination only.                  | None allowed.                                                                                               |
| AP, R-M, and R-H zones with 5 or more residences per site or with non-residential uses on site | 1 sign per street frontage maximum.<br>30 sq. ft. maximum size per sign.<br>Placement a minimum 5 feet below roofline.<br>External illumination only. | 1 sign per site maximum.<br>20 sq. ft. maximum size.<br>6 feet high maximum.<br>External illumination only. |

#### 17.20.150 Service Commercial General Provisions and Standards

No business, service, or processes that is not a part of the main use of the site shall be conducted outside a completely enclosed permanently fixed structure, except where specifically permitted by this title. Mechanical equipment shall be located a minimum of five (5) feet from a rear or side lot line that abuts an R-L, R-M, R-H, OR, O, PF, AP, or CO zone district.

#### 17.14.180 High-Density Residential General Provisions and Standards

In accordance with the R-H High-Density Residential zone district standards, structures and the use of structures or land shall be subject to the requirements and standards prescribed in Chapter 17.50.

**Analysis:** The Hanford Place Development will be developed consistent with the General Provisions set forth for the C-S Service Commercial and R-H High-Density Residential zone district.

### FINDINGS FOR APPROVAL

#### General Plan Amendment No. 2022-01

In accordance with HMC Section 17.88.040, before a general plan amendment may be approved, all of the following findings shall be made by the reviewing authority:

1. That the amendment is internally consistent with the goals, objectives, and policies of the General Plan and the Municipal Code.

Analysis: That Rezone No. 2022-01 is internally consistent with the goals, objectives, and policies of the General Plan, specifically consistent with Goals E1, L2, and L3, and Policies

L38-41, L51-55, L11, L107, L135, L137 and P80 (as described in the General Plan Amendment section, above). All regulations pertaining to C-S – Service Commercial and R-H High-Density Residential zone district will be enforced as development occurs through the Site Plan Review process, except as expressly modified by the Hanford Place Development Master Plan.

2. The amendment would not be detrimental to the public health, safety, or welfare of the community.

Analysis: That this application has been reviewed by County departments, utility companies, City Fire Department, City Building Department, and other involved departments. Any mitigation required for public health and safety were applied to the proposal and required in the mitigation monitoring and reporting program.

3. The amendment would maintain the appropriate balance of land uses within the City;

Analysis: That jobs-housing balance is achieved by increasing opportunities for people to work and live in close proximity. The ratio is expressed as the number of jobs divided by the number of housing units. The jobs-housing balance is a general tool for analyzing where people work, where they live, and how effectively they can travel between the two. In the planning area, the jobs-housing balance ratio in 2013-2014 was 1.17. It is estimated that the implementation of the General Plan would increase the jobs-housing balance by 0.45 to 1.62, which would make the planning area a jobs-rich area. The proposal to change the designation from Highway Commercial to a combination of Service Commercial and High-Density Residential will impact the job-housing balance projected by increasing the number of residential units in the area. The addition of the residential units to the formerly commercial designation will not affect the City's ability to maintain an appropriate balance of land uses within the City, as the increase in housing will bring more residential units to the jobs-rich planning area.

4. The anticipated land uses on the subject site would be compatible with existing and future surrounding uses.

Analysis: That the Hanford Place Master Plan proposes the development of a medical and mixed-use development on property proposed to be zoned C-S Service Commercial and R-H High-Density Residential. The land uses within the Hanford Place development are compatible with the surrounding land uses and compatible with future surrounding lands uses.

| Direction | Existing Land Use                                                    | General Plan Designation                                | Zone District                                                             |
|-----------|----------------------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------------------------|
| North     | Railroad; Adventist Health Medical Center; single-family residential | Office; Office Residential                              | O Office; O-R Office Residential                                          |
| South     | CA-198; car dealership; basin; single-family residential             | Highway Commercial, Open Space, Low-Density Residential | C-H Highway Commercial, PF Public Facility, R-L-5 Low-Density Residential |
| East      | Integrate shopping center – grocery, retail, gym, restaurant         | Regional Commercial                                     | C-R Regional Commercial                                                   |

|      |                                                                     |                    |                        |
|------|---------------------------------------------------------------------|--------------------|------------------------|
| West | Veterinary hospital, mini-storage, California Highway Patrol, hotel | Highway Commercial | C-H Highway Commercial |
|------|---------------------------------------------------------------------|--------------------|------------------------|

The project will be developed in conformance with the C-S Service Commercial and R-H High-Density Residential zone district regulations, except where expressly modified by the Hanford Place Master Plan (PUD).

### **Rezone No. 2022-01**

In accordance with HMC Section 17.86.030, before a zone change may be approved, all of the following findings shall be made by the reviewing authority: *(Note: the required findings to support the rezone application are the same as the findings used to support the General Plan Amendment).*

1. That the amendment is internally consistent with the goals, objectives, and policies of the General Plan and the Municipal Code.

Analysis: That Rezone No. 2022-01 is internally consistent with the goals, objectives, and policies of the General Plan, specifically consistent with Goals E1, L2, and L3, and Policies L38-41, L51-55, L11, L107, L135, L137 and P80. All regulations pertaining to C-S – Service Commercial and R-H High-Density Residential zone district will be enforced as development occurs through the Site Plan Review process, except as expressly modified by the Hanford Place Development Master Plan.

2. The amendment would not be detrimental to the public health, safety, or welfare of the community.

Analysis: That this application has been reviewed by County departments, utility companies, City Fire Department, City Building Department, and other involved departments. Any mitigation required for public health and safety were applied to the proposal and required in the mitigation monitoring and reporting program.

3. The amendment would maintain the appropriate balance of land uses within the City;

Analysis: That jobs-housing balance is achieved by increasing opportunities for people to work and live in close proximity. The ratio is expressed as the number of jobs divided by the number of housing units. The jobs-housing balance is a general tool for analyzing where people work, where they live, and how effectively they can travel between the two. In the planning area, the jobs-housing balance ratio in 2013-2014 was 1.17. It is estimated that the implementation of the General Plan would increase the jobs-housing balance by 0.45 to 1.62, which would make the planning area a jobs-rich area. The proposal to change the designation from Highway Commercial to a combination of Service Commercial and High-Density Residential will impact the job-housing balance projected by increasing the number of residential units in the area. The addition of the residential units to the formerly commercial designation will not affect the City's ability to maintain an appropriate balance of land uses within the city, as the increase in housing will bring more residential units to the jobs-rich planning area.

4. The anticipated land uses on the subject site would be compatible with existing and future surrounding uses.

**Analysis:** That the Hanford Place Master Plan proposes the development of a medical and mixed-use development on property proposed to be zoned C-S Service Commercial and R-H High-Density Residential. The land uses within the Hanford Place development are compatible with the surrounding land uses and compatible with future surrounding lands uses.

| Direction | Existing Land Use                                                    | General Plan Designation                                | Zone District                                                             |
|-----------|----------------------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------------------------|
| North     | Railroad; Adventist Health Medical Center; single-family residential | Office; Office Residential                              | O Office; O-R Office Residential                                          |
| South     | CA-198; car dealership; basin; single-family residential             | Highway Commercial, Open Space, Low-Density Residential | C-H Highway Commercial, PF Public Facility, R-L-5 Low-Density Residential |
| East      | Integrate shopping center – grocery, retail, gym, restaurant         | Regional Commercial                                     | C-R Regional Commercial                                                   |
| West      | Veterinary hospital, mini-storage, California Highway Patrol, hotel  | Highway Commercial                                      | C-H Highway Commercial                                                    |

The project will be developed in conformance with the C-S Service Commercial and R-H High-Density Residential zone district regulations, except where expressly modified by the Hanford Place Master Plan (PUD).

#### **Planned Unit Development No. 2022-01 (Hanford Place Master Plan)**

Pursuant to Section 17.82.060 of the Hanford Municipal Code, six findings must be made before approval of the planned unit development application:

1. That the location and design of the planned unit development is in accordance with the purpose of this title.

**Analysis:** Location - That in accordance with Section 17.82.050 of the Hanford Municipal Code, a planned unit development shall be a minimum five-acre site area, except that there shall be no minimum site area requirements if the site is an infill development site. The planned unit development pertains to a 39.16-acre development, which exceeds the minimum site area for a planned unit development.

Design and Purpose - That planned unit developments are encouraged to achieve a more functional, aesthetically pleasing, and harmonious living and working environment within the City, that otherwise might not be possible by strict adherence to the provisions of the municipal code. In certain instances, the objectives of the municipal code may be achieved by development that does not conform in all respects with the land use pattern designated on the zoning map or in the zone district prescribed. The planned unit development seeks to:

- ✓ A. To permit a site within more than one (1) zone district to mix the permitted or conditionally permitted land uses of both zones within the site without regard to the zone district boundary.

- ✓ C. To permit the lot patterns on size, shape, and layout that would otherwise not be permitted by the standards of the zone district in which the site is located.
- ✓ D. To modify the required building setbacks, distances between structures, and landscaped areas that would otherwise be required by this title.
- ✓ E. To reduce the amount of required parking spaces when spaces are shared among multiple land uses.

The design of Planned Unit Development No. 2022-01 is consistent with the objectives of Section 17.82.

2. That the planned unit development is being proposed to achieve one or more of the objectives identified in Section 17.82.030.

**Analysis:** That the planned unit development is requested, in order to achieve the following objectives identified in Section 17.82.030:

- ✓ A. To permit a site within more than one (1) zone district to mix the permitted or conditionally permitted land uses of both zones within the site without regard to the zone district boundary.
- ✓ C. To permit the lot patterns on size, shape, and layout that would otherwise not be permitted by the standards of the zone district in which the site is located.
- ✓ D. To modify the required building setbacks, distances between structures, and landscaped areas that would otherwise be required by this title.
- ✓ E. To reduce the amount of required parking spaces when spaces are shared among multiple land uses.

The design of Planned Unit Development No. 2022-01 is consistent with the objectives of Section 17.82.

3. That the location and design of the planned unit development and the conditions under which it would be operated or maintained will not be detrimental to the public health, safety, or welfare of the community to properties or improvements in the vicinity.

**Analysis:** Location - That in accordance with Section 17.82.050 of the Hanford Municipal Code, a planned unit development shall be a minimum five-acre site area, except that there shall be no minimum site area requirements if the site is an infill development site. The planned unit development pertains to a 39.16-acre development, which exceeds the minimum site area for a planned unit development.

Design and Purpose - That planned unit developments are encouraged to achieve a more functional, aesthetically pleasing, and harmonious living and working environment within the City, that otherwise might not be possible by strict adherence to the provisions of the municipal code. In certain instances, the objectives of the municipal code may be achieved by development that does not conform in all respects with the land use pattern designated



on the zoning map or in the zone district prescribed. The planned unit development seeks to:

- ✓ A. To permit a site within more than one (1) zone district to mix the permitted or conditionally permitted land uses of both zones within the site without regard to the zone district boundary.
- ✓ C. To permit the lot patterns on size, shape, and layout that would otherwise not be permitted by the standards of the zone district in which the site is located.
- ✓ D. To modify the required building setbacks, distances between structures, and landscaped areas that would otherwise be required by this title.
- ✓ E. To reduce the amount of required parking spaces when spaces are shared among multiple land uses.

Conditions of Operation – The Hanford Place Master Plan will function, as described in the Master Plan (**Attachment 1**).

Main objectives of the Master Plan include:

#### Zoning and Allowed Uses

Through the Planned Unit Development, the following uses shall be allowed by right. This would apply to all locations on the site and would not be limited by the conceptual site plan:

- All uses listed as permitted or conditionally permitted in the R-H High Density Residential Zone
- All uses listed as permitted or conditionally permitted in the C-S Service Commercial Zone
- Assisted living, skilled nursing, hospice.
- College/university satellite campus
- Hotel
- Residence in the same building as a commercial or office use
- Urgent care clinic

The overall intensity of the total site would be limited by the intensity analyzed in the CEQA document. A higher intensity than that would require an amendment to the PUD. Land use locations are flexible and may change from the conceptual plan. The roadway alignments and ponding basin location would not change.

The included conceptual layout for the site has been prepared by Langdon Wilson Intl. Architecture. Individual sites may be developed independently of the Master Plan, allowing for building size, placement, and use to vary from the character in the illustrations. Revised layout plans would be followed up with specific site plans and parcel maps that would create the public right-of-way.

#### Design Conditions

In order for Hanford Place to have a consistent theme and to operate as a cohesive group of uses, the following design conditions are incorporated into the PUD:

1. Establish that cross-access and shared parking agreements are required for adjacent parcels as they are created prior to, or in conjunction with, parcel map or lot line adjustment approval.
2. Landscaping and lighting design shall be consistent between the sites in the PUD plan area.
3. Uses are not required to obey the zone boundary in the PUD plan area. Uses within the PUD plan area can be from either of the zones within the PUD plan area.
4. A block wall is not required within the PUD plan area between the zones.
5. Additional building setbacks are not required between the two zones within the PUD plan area. The C-S zone required setbacks shall apply to the entire PUD plan area.
6. The maximum building height for the PUD area shall be permit the C-S zone, which is 50 feet.
7. Buildings within the PUD plan area shall have a uniform/cohesive design type, with the exception of standalone residential or hotel buildings, which are not required to have similar design, but shall have compatible colors and design elements. Elevation plans shall be submitted with site plans to confirm compliance. Standards shall be set by the first development in the PUD plan area for succeeding developments.
8. The number of on-site parking spaces shall be as follows:
  - a. Motel or hotel – 1 space per guest room plus 1 space per employee
  - b. Assisted living, skilled nursing facility, or hospice – 1 space for every 4 beds.
  - c. c. multifamily dwellings - at least 50% of spaces shall be covered.
    - ii. one-bedroom - 1.5 spaces per dwelling unit
    - iii. two-bedroom - 1.75 spaces per dwelling unit
    - iv. three or more bedrooms - 2 spaces per dwelling unit
  - d. d. all other allowed uses - 1 space per 350 square feet of building space.
9. A sign program shall be established prior to building permit approval for the first office or commercial use. The sign program would not apply to residential, and hotel/motel uses, which would follow sign standards in the Zoning Ordinance.

All development will be reviewed during the Site Plan Review process when physical development is proposed.

4. That the location and design of the planned unit development will not generate more traffic

than the streets in the vicinity can carry without congestion and will not overload utilities.

**Analysis:** The project has been reviewed in an initial study, for which a traffic impact study (TIS) was conducted.

The study area for the TIS included the following study intersections and roadway segments.

#### Intersections

1. 12th Avenue/Glendale Avenue
2. 12th Avenue/SR-198 westbound (WB) Ramps
3. 12th Avenue/SR-198 eastbound (EB) Ramps
4. Campus Drive/Lacey Boulevard
5. Campus Drive/7th Street
6. Campus Drive/6th Street
7. 11th Avenue/Lacey Boulevard
8. 11th Avenue /7th Street
9. 11th Avenue/6th Street
10. 11th Avenue/5th Street
11. 11th Avenue/4th Street-SR-198 WB On Ramp
12. 11th Avenue/3rd Street-SR-198 EB Off Ramp

#### Segments

1. Lacey Boulevard
  - 12th Avenue to Campus Drive
  - Campus Drive to 11th Avenue
  - 7th Street
  - Campus Drive to 11th Avenue
2. 6th Street
  - Campus Drive to 11th Avenue
3. Glendale Avenue
  - East of 12th Avenue
4. 5th Avenue
  - West of 11th Avenue
- E. Campus Drive
  - Lacey Boulevard to Glendale Avenue

The TIS includes the LOS analysis for the following traffic scenarios:

- Existing Conditions
- Existing Plus Project
- Near-Term Plus Project
- Cumulative Year 2042 Without Project
- Cumulative Year 2042 Plus Project

The TIS concluded that the impact on traffic would be less than significant.

5. That the planned unit development's population density, site area and dimensions, site coverage, yard spaces, height of structures, distances between structures, off-street parking and off-street loading facilities, landscaped areas and street design will produce an environment of stable and desired character consistent with the purpose of this title.

**Analysis:** That the project has been evaluated for consistency with the requirements of Section 17.14 High-Density Residential zone district and 17.20 C-S Service Commercial zone district. All requirements for density, site area, dimensions, site coverage, open space, height of structures, distance between structures, off-street parking and loading facilities, and landscaped areas have been satisfied, except where expressly modified by the Hanford Place Master Plan (PUD 2022-01). The modifications proposed through the Hanford Place Master Plan will produce a cohesive design and an environment of stable and desired character consistent with the purpose of this title. The implementation of medical and mixed-use developments achieves several goals and policies of the General Plan, specifically Goals E1, L2, and L3, and Policies L38-41, L51-55, L11, L107, L135, L137 and P80.

6. That the combination of different dwelling types, architectural appearance, and/or varieties of land uses in the development will complement each other and harmonize with the existing and proposed land uses in the vicinity.

**Analysis:** The Hanford Place Master Plan proposes a medical and mixed-use development on an underutilized, infill parcel, proposed to be designated as C-S Service Commercial and R-H High-Density Residential. Through cohesive design, comprehensive design criteria, and medical-focused uses, with supportive residential, educational, and commercial uses, the Planned Unit Development proposes a design and combination of uses that will complement and harmonize across the zone districts proposed and achieve a goal of the General Plan to promote horizontal mixed-use development. The implementation of medical and mixed-use developments achieves several goals and policies of the General Plan, specifically Goals E1, L2, and L3, and Policies L38-41, L51-55, L11, L107, L135, L137 and P80.

## CONSULTATION

### Early Consultation

Early consultation to agencies outside of the City of Hanford (pursuant to CEQA Guidelines Section 15082) was conducted for the project.

Early consultation was received from:

- Pacific Gas and Electric Company – November 3, 2022 (Reflecting no comments) – **Attachment 3.**
- San Joaquin Valley Air Pollution Control District – November 8, 2022 – **Attachment 4.**
- Santa Rosa Rancheria Tachi-Yokut Tribe – November 9, 2022 – **Attachment 5.**

Early consultation letters are included and analyzed in the initial study.

### Consultation

In accordance with Section 15073 of the California Environmental Quality Act Guidelines, a Notice of Intent to Adopt a Mitigated Negative Declaration was sent to the concerned agencies, mailed to residents within 300 feet of the project site, and posted on CEQANet on July 6, 2023, for a 30-day review period. No comments have been received as of the date of preparation of this report.

## ENVIRONMENTAL ASSESSMENT

Mitigated Negative Declaration No. 2023-93 (SCH Number 2023070011) is recommended for the project based on the following: In accordance with the California Environmental Quality Act (CEQA), General Plan Amendment No. 2022-01, Rezone No. 2022-01, and Planned Unit Development No. 2022-01 were evaluated in an Environmental Assessment/Initial Study. Based on the review, it was determined that the proposed project would not result in a significant adverse impact on the environment with the incorporation of mitigation measures, therefore Mitigated Negative Declaration No. 2023-93 has been prepared, attached as **Attachment 2**.

## PUBLIC COMMENTS

Notice of Public Hearing for the proposed projects was published in the Hanford Sentinel, posted on the Office of Planning and Research (OPR) CEQANet website, and mailed to property owners within 300 ft. of the project site on July 6, 2023. During that time, one comment letter was received:

Adventist Health Systems Comment Letter – **Attachment 6**. The letter details concerns related to the environmental document prepared for the project.

Following receipt of the letter, the applicant conducted various meetings with the Adventist Health team to reach consensus and address the concerns presented within the letter.

The attached letter was received on behalf of Adventist Health Systems on November 12, 2024, indicating project support – **Attachment 7**.

Due to the continuation of the original Planning Commission public hearing, renoticing and recirculation of the Notice of Intent to Adopt a Mitigated Negative Declaration was required. Notice of the Public Hearing was published in the Hanford Sentinel and mailed to property owners within 300 feet of the project site on December 11, 2024.

One additional comment was received on January 9, 2025, from Rhett Swasey. Mr. Swasey is a partner in business at Hanford Veterinary Hospital and has concerns regarding construction impacts of the project and the redesign of Glendale Avenue – full letter attached, **Attachment 8**.

## STAFF RECOMMENDATION

1. Recommend certification of Mitigated Negative Declaration No. 2023-93 for the project to the City Council.
2. Adopt Resolution No. 2025-04, recommending approval of General Plan Amendment No. 2022-01 to the City Council.
3. Adopt Resolution No. 2025-05, recommending approval Rezone No. 2022-01 to the City Council.
4. Adopt Resolution No. 2025-06, recommending approval of Planned Unit Development No. 2022-01 to the City Council.

## RESOLUTION NO. 2025-04

**A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF HANFORD RECOMMENDING APPROVAL OF GENERAL PLAN AMENDMENT NO. 2022-01 TO THE CITY COUNCIL. GENERAL PLAN AMENDMENT NO. 2022-01: A REQUEST TO CHANGE THE GENERAL PLAN DESIGNATION ON 39.16 ACRES FROM HIGHWAY COMMERCIAL TO A COMBINATION SERVICE COMMERCIAL AND HIGH-DENSITY RESIDENTIAL. THE PROJECT IS LOCATED BETWEEN 11<sup>TH</sup> AND 12<sup>TH</sup> AVENUES ALONG GLENDALE DRIVE, NORTH OF HIGHWAY 198 (APN 011-060-007, 011-060-008, 012-290-040, 012-290-042, AND 012-290-054).**

At a regular meeting of the Planning Commission of the City of Hanford duly called and held on January 14, 2025, on motion of Commissioner \_\_\_\_\_, seconded by Commissioner \_\_\_\_\_, and duly carried, the following resolution was adopted:

**WHEREAS**, an application, filed by Steve Brandt – QK, for General Plan Amendment No. 2022-01 requesting a General Plan Amendment to change the General Plan land use designation from Highway Commercial to a combination of Service Commercial and High-Density Residential on approximately 39.16 acres, as shown in **Exhibit A**, was presented to the Hanford City Planning Commission on August 8, 2023; and,

**WHEREAS**, the project is located at between 11<sup>th</sup> and 12<sup>th</sup> Avenues along Glendale Drive, north of Highway 198 (APN 011-060-007, 011-060-008, 012-290-042, and 012-290-054); and

**WHEREAS**, the City of Hanford Planning Commission considered the General Plan Amendment, in accordance with Section 17.88 of the Hanford Municipal Code, at its regularly scheduled meeting on January 14, 2025; and,

**WHEREAS**, the City of Hanford Planning Commission considered the evidence presented in the staff report and testimony presented during the public hearing; and

**WHEREAS**, the Initial Study, Mitigated Negative Declaration No. 2023-93, and all notices related thereto were prepared in compliance with the California Environmental Quality Act (CEQA) and the City of Hanford Municipal Code and Policies; and

**NOW THEREFORE, BE IT RESOLVED**, that the Planning Commission hereby recommends that the City Council of the City of Hanford find that no significant environmental impacts would result from the proposed project with the incorporation of mitigation measures, adopt a Mitigation and Monitoring Reporting Program, attached as **Exhibit B**, and certify that Mitigated Negative Declaration No. 2023-93 was prepared consistent with CEQA and City of Hanford Environmental Guidelines.

**NOW THEREFORE BE IT FURTHER RESOLVED**, that the City of Hanford Planning Commission, in accordance with Section 17.88.040 of the Hanford Municipal Code, recommends approval to the City Council of General Plan Amendment No. 2022-01, based upon the following findings and on the evidence presented:

1. That the amendment is internally consistent with the goals, objectives, and policies of the General Plan and the Municipal Code.

Analysis: That Rezone No. 2022-01 is internally consistent with the goals, objectives, and policies of the General Plan, specifically consistent with Goals E1, L2, and L3, and Policies L38-41, L51-55, L11, L107, L135, L137 and P80. All regulations pertaining to C-S – Service Commercial and R-H High-Density Residential zone district will be enforced as development occurs through the Site Plan Review process, except as expressly modified by the Hanford Place Development Master Plan.

2. The amendment would not be detrimental to the public health, safety, or welfare of the community.

Analysis: That this application has been reviewed by County departments, utility companies, City Fire Department, City Building Department, and other involved departments. Any mitigation required for public health and safety were applied to the proposal and required in the mitigation monitoring and reporting program.

3. The amendment would maintain the appropriate balance of land uses within the City;

Analysis: That jobs-housing balance is achieved by increasing opportunities for people to work and live in close proximity. The ratio is expressed as the number of jobs divided by the number of housing units. The jobs-housing balance is a general tool for analyzing where people work, where they live, and how effectively they can travel between the two. In the planning area, the jobs-housing balance ratio in 2013-2014 was 1.17. It is estimated that the implementation of the General Plan would increase the jobs-housing balance by 0.45 to 1.62, which would make the planning area a jobs-rich area. The proposal to change the designation from Highway Commercial to a combination of Service Commercial and High-Density Residential will impact the job-housing balance projected by increasing the number of residential units in the area. The addition of the residential units to the formerly commercial designation will not affect the City's ability to maintain an appropriate balance of land uses within the City, as the increase in housing will bring more residential units to the jobs-rich planning area.

4. The anticipated land uses on the subject site would be compatible with existing and future surrounding uses.

Analysis: That the Hanford Place Master Plan proposes the development of a medical and mixed-use development on property proposed to be zoned C-S Service Commercial and R-H High-Density Residential. The land uses within the Hanford Place development are compatible with the surrounding land uses and compatible with future surrounding lands uses.

| Direction | Existing Land Use                                                    | General Plan Designation                                | Zone District                                                             |
|-----------|----------------------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------------------------|
| North     | Railroad; Adventist Health Medical Center; single-family residential | Office; Office Residential                              | O Office; O-R Office Residential                                          |
| South     | CA-198; car dealership; basin; single-family residential             | Highway Commercial, Open Space, Low-Density Residential | C-H Highway Commercial, PF Public Facility, R-L-5 Low-Density Residential |
| East      | Integrate shopping center – grocery, retail, gym, restaurant         | Regional Commercial                                     | C-R Regional Commercial                                                   |

|      |                                                                     |                    |                        |
|------|---------------------------------------------------------------------|--------------------|------------------------|
| West | Veterinary hospital, mini-storage, California Highway Patrol, hotel | Highway Commercial | C-H Highway Commercial |
|------|---------------------------------------------------------------------|--------------------|------------------------|

The project will be developed in conformance with the C-S Service Commercial and R-H High-Density Residential zone district regulations, except where expressly modified by the Hanford Place Master Plan (PUD 2022-01).

**THEREFORE, BE IT RESOLVED** that General Plan Amendment No. 2022-01 be recommended for approval to the City Council, subject to the following condition(s):

**ADMINISTRATION DEPARTMENT**

Contact the City Attorneys' Office: (559) 584-6656

Concerning questions that you may have on the conditions listed below:

**Defense and Indemnification Provisions:**

1. That the applicant shall defend, indemnify, and hold harmless the City of Hanford ("City"), its officials, officers, employees, representatives, agents and attorneys, from and against all claims, damages, losses, judgments, liabilities, expenses and other costs, including litigation costs and attorney's fees, arising out of, resulting from, or in connection with, the City's act or acts leading up to and including approval of any environmental document and/or granting of any approvals relating to the Project. Applicant's obligation to defend, indemnify and hold the City harmless specifically includes, but is not limited to, any suit or challenge by any third party against the City which challenges or seeks to set aside, void or annul the legality or adequacy of any environmental document approved by the City or any approval related to the Project.

**PASSED AND ADOPTED** at a regular meeting of the Hanford City Planning Commission by the following votes:

AYES: Commissioners  
 NOES: Commissioners  
 ABSTAIN: Commissioners  
 ABSENT: Commissioners

STATE OF CALIFORNIA )  
 COUNTY OF KINGS )ss.  
 CITY OF HANFORD )

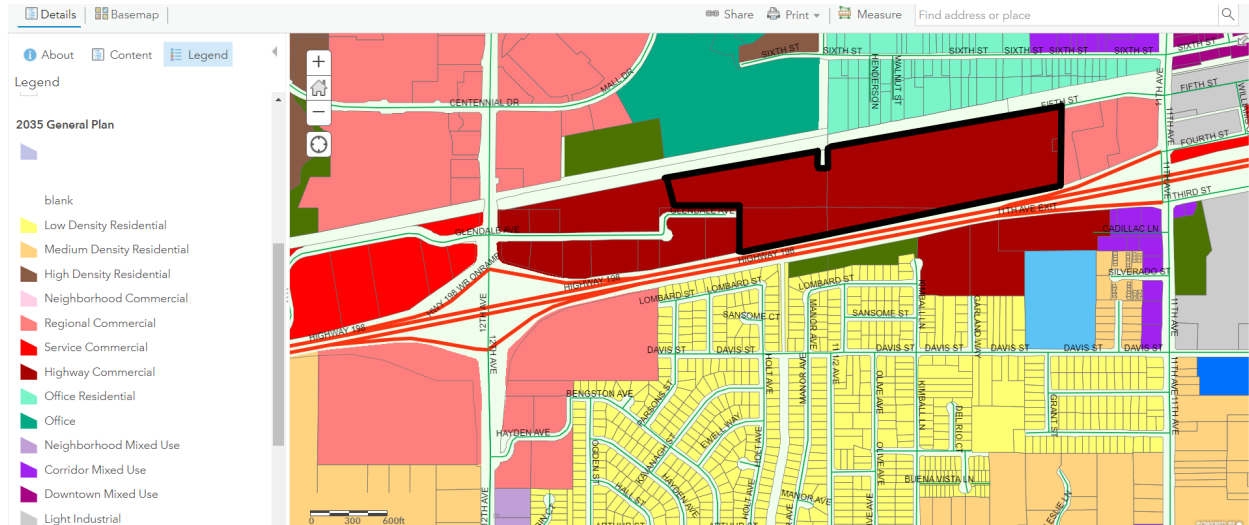
I, **Jason Waters**, Secretary of the City of Hanford Planning Commission, do hereby certify the foregoing resolution was duly passed and adopted by the Planning Commission of the City of Hanford at a regular meeting thereof held on the 14<sup>th</sup> day of January, 2025.

Jason Waters, Secretary

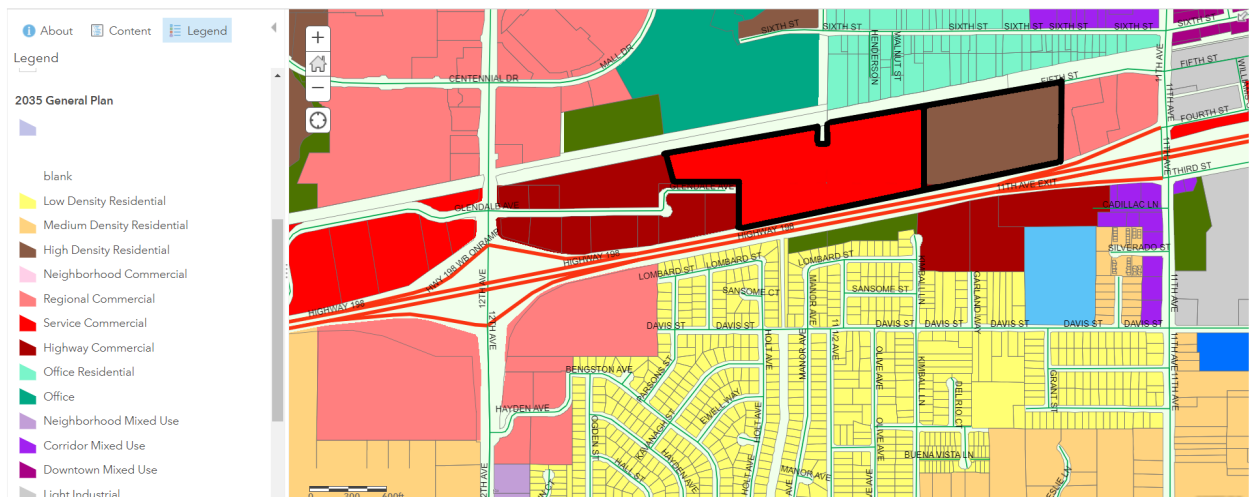


**Exhibit A**  
Current and Proposed General Plan Land Use Designation

**Existing General Plan Designation  
Highway Commercial**



**Figure 8: Proposed General Plan Designation  
Service Commercial and High-Density Residential**



**Exhibit B**  
Mitigation Monitoring and Reporting Program

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Biological Resources</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <i>Will the project:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Mitigation Measures</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <p><b>Mitigation Measure BIO-1</b> Conduct Preconstruction Clearance Surveys for San Joaquin Kit Fox and Burrowing Owl. A preconstruction clearance survey is required for San Joaquin kit fox and burrowing owl no more than 30 calendar days prior to initiation of project activities. All survey results must be delivered to the United States Fish and Wildlife Service's (USFWS), the California Department of Fish and Wildlife (CDFW), and the City. If the survey results find an active burrow of one or both of these species on the project site, the applicant must coordinate with the applicable resource agencies (CDFW for burrowing owl, CDFW and USFWS for kit fox) to obtain applicable agency approval(s)/permit(s) prior to any ground disturbance activities on the site.</p> <p>Specific avoidance, den excavation, passive relocation, and compensatory mitigation activities shall be performed as required by the applicable agency. Appropriate provisions of the CDFW Staff Report on Burrowing Owl Mitigation and USFWS Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox shall be adhered to.</p> |
| <p><b>Mitigation Measure BIO-2</b> Worker Environmental Awareness Training. Prior to initial groundbreaking, Worker Environmental Awareness Training shall be conducted by a qualified biologist to educate all construction personnel on the relevant federal, state, and local laws related to potentially occurring special-status species at the site. The tailgate session shall include training on identification of species that may be found on the project site, the status of those species, and any legal protection afforded to those species. Personnel will be advised to report any special-status species encountered promptly. A fact sheet conveying this information will be prepared for display or for distribution to anyone who may enter the project site.</p>                                                                                                                                                                                                                                                                                                                                                                           |
| <p><b>Mitigation Measure BIO-3</b> Construction Site Housekeeping and Operational Requirements. Habitat subject to permanent and temporary construction disturbances and other types of ongoing project-related disturbance activities shall be minimized by adhering to the following USFWS Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox:</p> <p>a) To minimize temporary disturbances, all project-related vehicle traffic shall be restricted to established roads, construction areas, and other designated areas. These areas shall also be included in preconstruction surveys and, to the extent possible, shall be established in locations disturbed by previous activities to prevent further impacts.</p>                                                                                                                                                                                                                                                                                                                                                                                                         |

b) Project-related vehicles shall observe a daytime speed limit of 20-mph throughout the site in all project sites, except on county roads and state and federal highways; this is particularly important at night when kit foxes are most active. Night-time construction shall be minimized to the extent possible. However, if it does occur, then the speed limit shall be reduced to 10-mph. Off-road traffic outside of designated project sites shall be prohibited.

c) To prevent inadvertent entrapment of kit foxes or other animals during the construction phase of a project, all excavated, steepwalled holes or trenches more than 2-feet deep shall be covered at the close of each working day by plywood or similar materials. If the trenches cannot be closed, one or more escape ramps constructed of earthen-fill or wooden planks shall be installed. Before such holes or trenches are filled, they shall be thoroughly inspected for trapped animals. If at any time a trapped or injured kit fox is discovered, the USFWS and the CDFW shall be contacted.

d) Kit foxes are attracted to den-like structures such as pipes and may enter stored pipes and become trapped or injured. All construction pipes, culverts, or similar structures with a diameter of 4-inches or greater that are stored at a construction site for one or more overnight periods shall be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a kit fox is discovered inside a pipe, that section of pipe shall not be moved until the USFWS and CDFW have been consulted. If necessary, and under the direct supervision of a qualified biologist, the pipe may be moved only once to remove it from the path of construction activity, until the fox has escaped. In the case of trapped animals, escape ramps or structures shall be installed immediately to allow the animal(s) to escape, or the USFWS and CDFW should be contacted for further guidance.

e) All food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in securely closed containers and removed at least once a week from a construction or project site.

f) Pets, such as dogs or cats, shall not be permitted on the project site to prevent harassment, mortality of kit foxes, or destruction of dens.

g) Use of rodenticides and herbicides in project sites shall be restricted. This is necessary to prevent primary or secondary poisoning of kit foxes and the depletion of prey populations on which they depend. All uses of such compounds shall observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and other state and federal legislation. If rodent control must be conducted, zinc phosphide should be used because of a proven lower risk to kit fox.

**Mitigation Measure BIO-4** Nesting Bird Surveys and Avoidance. If vegetation removal, construction, or grading activities are planned to occur within the active nesting bird season (February 15 through September 15), a qualified biologist shall conduct a preconstruction nesting bird survey no more than 5 days prior to the start of such activities. The nesting bird survey shall include the project site and areas immediately adjacent to the site that could potentially be affected by project-related activities such as noise, vibration, increased human activity, and dust, etc. For any active nest(s) identified, the qualified biologist shall establish an appropriate buffer zone around the active nest(s). The appropriate buffer shall be determined by the qualified biologist based on species, location, and the nature of the proposed activities. Project activities shall be avoided within the buffer zone until the nest is deemed no longer active by the qualified biologist.

**Mitigation Measure BIO-5** Agency Coordination for Peoples Ditch. Prior to any modifications to Peoples Ditch, it is recommended to consult with the United States Army Corps of Engineers (USACE), CDFW, and Regional Water Quality Control Board (RWQCB) to verify the feature's jurisdictional status and obtain applicable permit(s) and/or authorization(s). A notification of streambed alteration should be submitted to the CDFW in accordance with Section 1602 of the California Fish and Game Code. Unless categorically excluded under effective definitions or existing documentation confirms that no permit is needed, the Central Valley RWQCB and Sacramento District of the USACE should be consulted regarding potential permitting needs under the California Water Code and federal Clean Water Act, respectively, associated with the proposed Peoples Ditch modifications.

### **Cultural Resources**

#### *Will the project:*

Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Disturb any human remains, including those interred outside of formal cemeteries?

### **Mitigation Measures**

**Mitigation Measure CULT-1** Because of the very high sensitivity of the soil type in the project area, the possibility exists that buried archaeological deposits within the project site. Therefore, archaeological monitoring must be conducted during ground-disturbing construction activities in native soil, including clearing and grubbing. Monitoring should occur on a full-time basis during all excavation activities until the Project Archaeologist, based on the archaeological monitor's observations, is satisfied that there is little likelihood of encountering intact archaeological deposits. The Project Archaeologist may also determine it is appropriate to reduce monitoring to spot-checking or on a part-time basis. Upon completion of the monitoring and, if necessary, mitigation, the archaeologist should prepare a report to document the methods and results of the monitoring. The final report should be submitted to the SSJVIC.

**Mitigation Measure CULT-2** Additional mapping and subsurface testing of AE-4167-01 shall be conducted to evaluate its eligibility for inclusion in the California Register of Historical Resources, pursuant to California Public Resources Code (PRC) 5024.1. Additional focused subsurface testing in areas not previously disturbed by historic-era activities must be conducted to confirm presence/absence of high-sensitivity paleosols that may include intact prehistoric cultural deposits. If intact prehistoric cultural deposits are encountered during subsurface presence/absence testing, further investigation must be conducted to determine if the deposit retains integrity and is eligible for inclusion in the California Register of Historical Resources. The methods and findings of the additional studies would be presented as an addendum to the Cultural Resource Inventory for the Hanford Place Medical and Mixed-Use Property Project and would include cultural resource management recommendations to guide mitigation of potential adverse effects to any identified historical resources within the project area.

**Mitigation Measure CULT-3** Any human remains encountered during project-related ground disturbing activities shall be treated in accordance with California Health and Safety Code Section 7050.5. The project sponsor shall inform all contractor(s) performing excavation of the sensitivity of the project site for human remains and include the following directive in the appropriate contract documents: If human remains are uncovered, all work within 50 feet of the discovery shall be halted and the Kings County Coroner notified immediately. At the same time, the on-site monitoring archaeologist shall assess the situation and consult with agencies as appropriate.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Project personnel shall not collect or move any human remains or associated materials. If the human remains are of Native American origin, the Coroner must notify the California State Native American Heritage Commission (NAHC) within 24 hours of this identification. The NAHC will formally identify a Native American Most Likely Descendant (MLD)—if one is not already on-site—to inspect the site and provide recommendations for the proper treatment of the remains and associated grave goods. Such recommendations shall be carried out to the satisfaction of the NAHC prior to work resuming within 50 feet of the discovered remains.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Mitigation Measure CULT-4</b> A Burial Treatment Plan shall be entered into by the project applicant/property owner prior to any ground disturbing activities.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Geology and Soils</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <i>Will the project:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| b. Result in substantial soil erosion or the loss of topsoil?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| f. Directly or indirectly destroy a unique paleontological                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Mitigation Measures</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Mitigation Measure GEO-1</b> To reduce the potential for soil erosion during construction of the proposed project, an Erosion Control Plan shall be prepared for the project in conformance with the California Storm Water Best Management Practice Handbook for Construction Activity, prior to the start of grading.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Mitigation Measure GEO-2</b> The project applicant shall inform its contractor(s) of the sensitivity of the project area for paleontological resources. Should paleontological resources be encountered during project subsurface construction activities, all ground-disturbing activities within 25 feet shall be redirected and a qualified paleontologist contacted to assess the situation, consult with agencies as appropriate, and make recommendations for the treatment of the discovery. If found to be significant, and project activities cannot avoid the paleontological resources, adverse effects to paleontological resources shall be mitigated. Mitigation may include monitoring, recording the fossil locality, data recovery and analysis, a final report, and accessioning the fossil material and technical report to a paleontological repository. Public educational outreach may also be appropriate. Upon completion of the assessment, a report documenting methods, findings, and recommendations shall be prepared and submitted to the City for review, and (if paleontological materials are recovered) a paleontological repository, such as the University of California Museum of Paleontology (UCMP). The City shall verify that the above directive has been included in the appropriate contract documents. |
| <b>Greenhouse Gas Emissions</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <i>Will the project:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Mitigation Measures</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Mitigation Measure GHG-1</b> In order to meet the 2022 Scoping Plan greenhouse gas (GHG) requirements, consistent with State GHG reduction and equity prioritization goals, the proposed project shall provide electric vehicle charging capabilities that meet the most ambitious voluntary standard in the California Green Building Standards Code at the time of project approval as part of the final project design.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Hydrology and Water Quality</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <i>Will the project:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:</p> <ul style="list-style-type: none"> <li>i. Result in substantial erosion or siltation on- or off-site;</li> <li>ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite</li> <li>iii. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or</li> <li>iv. Impede or redirect flood flows?</li> </ul>           |
| <p>e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <p><b>Mitigation Measures</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <p><b>Mitigation Measure HYDRO-1</b> To minimize any potential short-term water quality effects from project-related construction activities, the project contractor shall implement Best Management Practices (BMPs) in conformance with the California Storm Water Best Management Practice Handbook for Construction Activity. In addition, the proposed project shall be in compliance with existing regulatory requirements, including the Water Pollution Control Preparation (WPCP) Manual. In addition, implementation of a Storm Water Pollution Prevention Plan (SWPPP) would be required under the National Pollutant Discharge Elimination System (NPDES) to regulate water quality associated with construction activities.</p> |
| <p><b>Mitigation Measure HYDRO-2</b> To reduce the potential for degradation of surface water quality during project operation, a Storm Water Management Plan (SWMP) shall be prepared for the proposed project. The SWMP shall describe specific programs to minimize storm water pollution resulting from the proposed project. Specifically, the SWMP shall identify and describe source control measures, treatment controls, and BMP maintenance requirements to ensure that the project complies with post-construction storm water management requirements of the Regional Water Quality Control Board (RWQCB).</p>                                                                                                                   |
| <p><b>Noise</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <p><i>Will the Project?</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <p>a. Cause generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <p><b>Mitigation Measure</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <p><b>Mitigation Measure NOI-1 Truck Movements.</b> All truck movements occurring during nighttime hours of 10:00 p.m. to 7:00 a.m. shall be required to use the Glendale Avenue access point only.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

**Mitigation Measure NOI-2** The project contractor shall implement the following measures during construction of the project:

- Per the City of Hanford Municipal Code, construction activities should not occur outside the hours of 7:00 a.m. to 8:00 p.m.
- All construction equipment shall be properly maintained and muffled as to minimize noise generation at the source.
- Noise-producing equipment shall not be operating, running, or idling while not in immediate use by a construction contractor.
- All noise-producing construction equipment shall be located and operated, to the extent possible, at the greatest possible distance from any noise-sensitive land uses.
- Locate construction staging areas, to the extent possible, at the greatest possible distances from any noise-sensitive land uses.
- Signs shall be posted at the construction site and near adjacent sensitive receptors displaying hours of construction activities and providing the contact phone number of a designated noise disturbance coordinator.

**Mitigation Measure NOI-3 Exterior Noise Levels.** The final design shall include a minimum 6.5- foot above-ground level sound wall around outdoor activity areas associated with the proposed hotel and apartment land uses to mitigate exterior noise levels to below 65 dB Ldn within these outdoor activity areas.

**Mitigation Measure NOI-4 Interior Noise Levels.** Once building-specific construction plans become available, interior noise levels should be reviewed and calculated by a qualified acoustical consultant to determine if additional noise attenuation mitigation measures are required to comply with interior noise level standards.

#### **Tribal Cultural Resources**

*Will the project:*

a. Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

- i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?  
Or
- ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

#### **Mitigation Measures**

See Mitigation Measures CULT-1 through CULT-4,

#### **Utilities and Service System**

*Will the project:*

Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?



| Mitigation Measures            |
|--------------------------------|
| See Mitigation Measure HYDRO-1 |

## RESOLUTION NO. 2025-05

**A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF HANFORD RECOMMENDING APPROVAL OF REZONE NO. 2022-01 TO THE CITY COUNCIL. REZONE NO. 2022-01 IS A REQUEST TO CHANGE THE ZONING DESIGNATION C-H HIGHWAY COMMERCIAL TO A COMBINATION OF C-S SERVICE COMMERCIAL AND R-H HIGH-DENSITY RESIDENTIAL ON 39.16 ACRES. THE PROJECT IS LOCATED BETWEEN 11<sup>TH</sup> AND 12<sup>TH</sup> AVENUES ALONG GLENDALE DRIVE, NORTH OF HIGHWAY 198 (APN 011-060-007, 011-060-008, 012-290-040, 012-290-042, AND 012-290-054).**

At a regular meeting of the Planning Commission of the City of Hanford duly called and held on January 14, 2025, on motion of Commissioner \_\_\_\_\_, seconded by Commissioner \_\_\_\_\_, and duly carried, the following resolution was adopted:

**WHEREAS**, an application, filed by Steve Brandt of QK for Rezone No. 2022-01, : a request to change the zoning on 39.16 acres from C-H Highway Commercial to C-S Service Commercial and R-H High-Density Residential with a Planned Unit Development overlay, as shown in **Exhibit A**, was presented to the Hanford City Planning Commission on January 14, 2025; and,

**WHEREAS**, the City of Hanford Planning Commission considered the Rezone, in accordance with Section 17.86 of the Hanford Municipal Code, at its regularly scheduled meeting on January 14, 2025; and,

**WHEREAS**, the City of Hanford Planning Commission considered the evidence presented in the staff report and testimony presented during the public hearing; and

**WHEREAS**, the Initial Study, Mitigated Negative Declaration No. 2023-93, and all notices related thereto were prepared in compliance with the California Environmental Quality Act (CEQA) and the City of Hanford Municipal Code and Policies; and

**NOW THEREFORE, BE IT RESOLVED**, that the Planning Commission hereby recommends that the City Council of the City of Hanford find that no significant environmental impacts would result from the proposed project with the incorporation of mitigation measures, adopt a Mitigation and Monitoring Reporting Program, attached as **Exhibit B**, and certify that Mitigated Negative Declaration No. 2023-93 was prepared consistent with CEQA and City of Hanford Environmental Guidelines.

**NOW THEREFORE BE IT FURTHER RESOLVED**, that the City of Hanford Planning Commission, in accordance with Section 17.86.030 of the Hanford Municipal Code, recommends approval to the City Council of Rezone No. 2022-01 based upon the following findings and on the evidence presented:

1. That the amendment is internally consistent with the goals, objectives, and policies of the General Plan and the Municipal Code.

Analysis: That Rezone No. 2022-01 is internally consistent with the goals, objectives, and policies of the General Plan, specifically consistent with Goals E1, L2, and L3, and Policies L38-41, L51-55, L11, L107, L135, L137 and P80. All regulations pertaining to C-S – Service Commercial and R-H High-Density Residential zone district will be enforced as development

occurs through the Site Plan Review process, except as expressly modified by the Hanford Place Development Master Plan.

2. The amendment would not be detrimental to the public health, safety, or welfare of the community.

Analysis: That this application has been reviewed by County departments, utility companies, City Fire Department, City Building Department, and other involved departments. Any mitigation required for public health and safety were applied to the proposal and required in the mitigation monitoring and reporting program.

3. The amendment would maintain the appropriate balance of land uses within the City;

Analysis: That jobs-housing balance is achieved by increasing opportunities for people to work and live in close proximity. The ratio is expressed as the number of jobs divided by the number of housing units. The jobs-housing balance is a general tool for analyzing where people work, where they live, and how effectively they can travel between the two. In the planning area, the jobs-housing balance ratio in 2013-2014 was 1.17. It is estimated that the implementation of the General Plan would increase the jobs-housing balance by 0.45 to 1.62, which would make the planning area a jobs-rich area. The proposal to change the designation from Highway Commercial to a combination of Service Commercial and High-Density Residential will impact the job-housing balance projected by increasing the number of residential units in the area. The addition of the residential units to the formerly commercial designation will not affect the City's ability to maintain an appropriate balance of land uses within the City, as the increase in housing will bring more residential units to the jobs-rich planning area.

4. The anticipated land uses on the subject site would be compatible with existing and future surrounding uses.

Analysis: That the Hanford Place Master Plan proposes the development of a medical and mixed-use development on property proposed to be zoned C-S Service Commercial and R-H High-Density Residential. The land uses within the Hanford Place development are compatible with the surrounding land uses and compatible with future surrounding lands uses.

| Direction | Existing Land Use                                                    | General Plan Designation                                | Zone District                                                             |
|-----------|----------------------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------------------------|
| North     | Railroad; Adventist Health Medical Center; single-family residential | Office; Office Residential                              | O Office; O-R Office Residential                                          |
| South     | CA-198; car dealership; basin; single-family residential             | Highway Commercial, Open Space, Low-Density Residential | C-H Highway Commercial, PF Public Facility, R-L-5 Low-Density Residential |
| East      | Integrate shopping center – grocery, retail, gym, restaurant         | Regional Commercial                                     | C-R Regional Commercial                                                   |
| West      | Veterinary hospital, mini-storage, California Highway Patrol, hotel  | Highway Commercial                                      | C-H Highway Commercial                                                    |

The project will be developed in conformance with the C-S Service Commercial and R-H High-Density Residential zone district regulations, except where expressly modified by the Hanford Place Master Plan (PUD).

**THEREFORE, BE IT RESOLVED** that Rezone No. 2022-01 be recommended for approval to the City Council, subject to the following condition(s):

**ADMINISTRATION DEPARTMENT**

Contact the City Attorneys' Office: (559) 584-6656

Concerning questions that you may have on the conditions listed below:

**Defense and Indemnification Provisions:**

1. That the applicant shall defend, indemnify, and hold harmless the City of Hanford ("City"), its officials, officers, employees, representatives, agents and attorneys, from and against all claims, damages, losses, judgments, liabilities, expenses and other costs, including litigation costs and attorney's fees, arising out of, resulting from, or in connection with, the City's act or acts leading up to and including approval of any environmental document and/or granting of any approvals relating to the Project. Applicant's obligation to defend, indemnify and hold the City harmless specifically includes, but is not limited to, any suit or challenge by any third party against the City which challenges or seeks to set aside, void or annul the legality or adequacy of any environmental document approved by the City or any approval related to the Project.

**PASSED AND ADOPTED** at a regular meeting of the Hanford City Planning Commission by the following votes:

AYES: Commissioners  
NOES: Commissioners  
ABSTAIN: Commissioners  
ABSENT: Commissioners

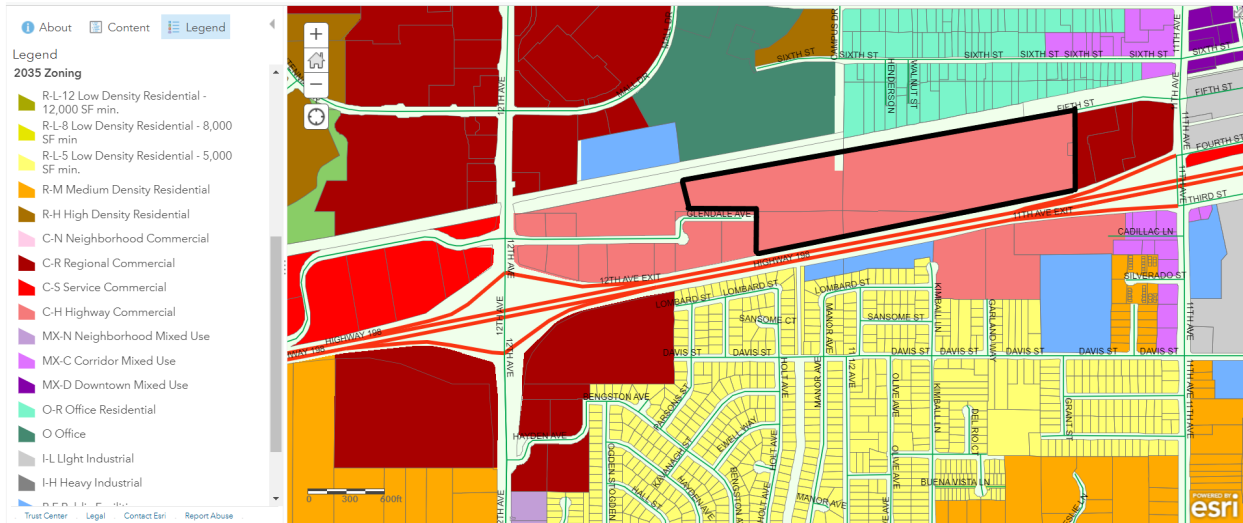
STATE OF CALIFORNIA )  
COUNTY OF KINGS )ss.  
CITY OF HANFORD )

I, **Jason Waters**, Secretary of the City of Hanford Planning Commission, do hereby certify the foregoing resolution was duly passed and adopted by the Planning Commission of the City of Hanford at a regular meeting thereof held on the 14<sup>th</sup> day of January, 2025.

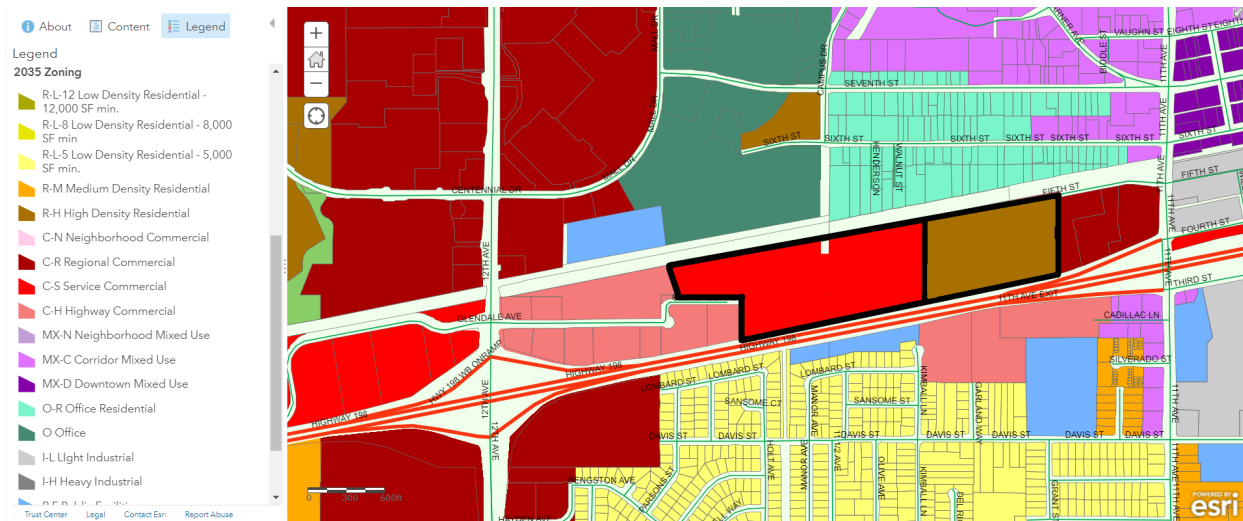
Jason Water, Secretary

**Exhibit A**  
Current and Proposed Zone District

**Existing Zoning**  
**C-H Highway Commercial**



**Proposed Zoning**  
**C-S Service Commercial and R-H High-Density Residential**



**Exhibit B**  
Mitigation Monitoring and Reporting Program

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Biological Resources</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <i>Will the project:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Mitigation Measures</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <p><b>Mitigation Measure BIO-1</b> Conduct Preconstruction Clearance Surveys for San Joaquin Kit Fox and Burrowing Owl. A preconstruction clearance survey is required for San Joaquin kit fox and burrowing owl no more than 30 calendar days prior to initiation of project activities. All survey results must be delivered to the United States Fish and Wildlife Service's (USFWS), the California Department of Fish and Wildlife (CDFW), and the City. If the survey results find an active burrow of one or both of these species on the project site, the applicant must coordinate with the applicable resource agencies (CDFW for burrowing owl, CDFW and USFWS for kit fox) to obtain applicable agency approval(s)/permit(s) prior to any ground disturbance activities on the site.</p> <p>Specific avoidance, den excavation, passive relocation, and compensatory mitigation activities shall be performed as required by the applicable agency. Appropriate provisions of the CDFW Staff Report on Burrowing Owl Mitigation and USFWS Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox shall be adhered to.</p> |
| <p><b>Mitigation Measure BIO-2</b> Worker Environmental Awareness Training. Prior to initial groundbreaking, Worker Environmental Awareness Training shall be conducted by a qualified biologist to educate all construction personnel on the relevant federal, state, and local laws related to potentially occurring special-status species at the site. The tailgate session shall include training on identification of species that may be found on the project site, the status of those species, and any legal protection afforded to those species. Personnel will be advised to report any special-status species encountered promptly. A fact sheet conveying this information will be prepared for display or for distribution to anyone who may enter the project site.</p>                                                                                                                                                                                                                                                                                                                                                                           |
| <p><b>Mitigation Measure BIO-3</b> Construction Site Housekeeping and Operational Requirements. Habitat subject to permanent and temporary construction disturbances and other types of ongoing project-related disturbance activities shall be minimized by adhering to the following USFWS Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox:</p> <p>a) To minimize temporary disturbances, all project-related vehicle traffic shall be restricted to established roads, construction areas, and other designated areas. These areas shall also be included in preconstruction surveys and, to the extent possible, shall be established in locations disturbed by previous activities to prevent further impacts.</p>                                                                                                                                                                                                                                                                                                                                                                                                         |

b) Project-related vehicles shall observe a daytime speed limit of 20-mph throughout the site in all project sites, except on county roads and state and federal highways; this is particularly important at night when kit foxes are most active. Night-time construction shall be minimized to the extent possible. However, if it does occur, then the speed limit shall be reduced to 10-mph. Off-road traffic outside of designated project sites shall be prohibited.

c) To prevent inadvertent entrapment of kit foxes or other animals during the construction phase of a project, all excavated, steepwalled holes or trenches more than 2-feet deep shall be covered at the close of each working day by plywood or similar materials. If the trenches cannot be closed, one or more escape ramps constructed of earthen-fill or wooden planks shall be installed. Before such holes or trenches are filled, they shall be thoroughly inspected for trapped animals. If at any time a trapped or injured kit fox is discovered, the USFWS and the CDFW shall be contacted.

d) Kit foxes are attracted to den-like structures such as pipes and may enter stored pipes and become trapped or injured. All construction pipes, culverts, or similar structures with a diameter of 4-inches or greater that are stored at a construction site for one or more overnight periods shall be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a kit fox is discovered inside a pipe, that section of pipe shall not be moved until the USFWS and CDFW have been consulted. If necessary, and under the direct supervision of a qualified biologist, the pipe may be moved only once to remove it from the path of construction activity, until the fox has escaped. In the case of trapped animals, escape ramps or structures shall be installed immediately to allow the animal(s) to escape, or the USFWS and CDFW should be contacted for further guidance.

e) All food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in securely closed containers and removed at least once a week from a construction or project site.

f) Pets, such as dogs or cats, shall not be permitted on the project site to prevent harassment, mortality of kit foxes, or destruction of dens.

g) Use of rodenticides and herbicides in project sites shall be restricted. This is necessary to prevent primary or secondary poisoning of kit foxes and the depletion of prey populations on which they depend. All uses of such compounds shall observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and other state and federal legislation. If rodent control must be conducted, zinc phosphide should be used because of a proven lower risk to kit fox.

**Mitigation Measure BIO-4** Nesting Bird Surveys and Avoidance. If vegetation removal, construction, or grading activities are planned to occur within the active nesting bird season (February 15 through September 15), a qualified biologist shall conduct a preconstruction nesting bird survey no more than 5 days prior to the start of such activities. The nesting bird survey shall include the project site and areas immediately adjacent to the site that could potentially be affected by project-related activities such as noise, vibration, increased human activity, and dust, etc. For any active nest(s) identified, the qualified biologist shall establish an appropriate buffer zone around the active nest(s). The appropriate buffer shall be determined by the qualified biologist based on species, location, and the nature of the proposed activities. Project activities shall be avoided within the buffer zone until the nest is deemed no longer active by the qualified biologist.



**Mitigation Measure BIO-5** Agency Coordination for Peoples Ditch. Prior to any modifications to Peoples Ditch, it is recommended to consult with the United States Army Corps of Engineers (USACE), CDFW, and Regional Water Quality Control Board (RWQCB) to verify the feature's jurisdictional status and obtain applicable permit(s) and/or authorization(s). A notification of streambed alteration should be submitted to the CDFW in accordance with Section 1602 of the California Fish and Game Code. Unless categorically excluded under effective definitions or existing documentation confirms that no permit is needed, the Central Valley RWQCB and Sacramento District of the USACE should be consulted regarding potential permitting needs under the California Water Code and federal Clean Water Act, respectively, associated with the proposed Peoples Ditch modifications.

### **Cultural Resources**

#### *Will the project:*

Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Disturb any human remains, including those interred outside of formal cemeteries?

### **Mitigation Measures**

**Mitigation Measure CULT-1** Because of the very high sensitivity of the soil type in the project area, the possibility exists that buried archaeological deposits within the project site. Therefore, archaeological monitoring must be conducted during ground-disturbing construction activities in native soil, including clearing and grubbing. Monitoring should occur on a full-time basis during all excavation activities until the Project Archaeologist, based on the archaeological monitor's observations, is satisfied that there is little likelihood of encountering intact archaeological deposits. The Project Archaeologist may also determine it is appropriate to reduce monitoring to spot-checking or on a part-time basis. Upon completion of the monitoring and, if necessary, mitigation, the archaeologist should prepare a report to document the methods and results of the monitoring. The final report should be submitted to the SSJVIC.

**Mitigation Measure CULT-2** Additional mapping and subsurface testing of AE-4167-01 shall be conducted to evaluate its eligibility for inclusion in the California Register of Historical Resources, pursuant to California Public Resources Code (PRC) 5024.1. Additional focused subsurface testing in areas not previously disturbed by historic-era activities must be conducted to confirm presence/absence of high-sensitivity paleosols that may include intact prehistoric cultural deposits. If intact prehistoric cultural deposits are encountered during subsurface presence/absence testing, further investigation must be conducted to determine if the deposit retains integrity and is eligible for inclusion in the California Register of Historical Resources. The methods and findings of the additional studies would be presented as an addendum to the Cultural Resource Inventory for the Hanford Place Medical and Mixed-Use Property Project and would include cultural resource management recommendations to guide mitigation of potential adverse effects to any identified historical resources within the project area.

**Mitigation Measure CULT-3** Any human remains encountered during project-related ground disturbing activities shall be treated in accordance with California Health and Safety Code Section 7050.5. The project sponsor shall inform all contractor(s) performing excavation of the sensitivity of the project site for human remains and include the following directive in the appropriate contract documents: If human remains are uncovered, all work within 50 feet of the discovery shall be halted and the Kings County Coroner notified immediately. At the same time, the on-site monitoring archaeologist shall assess the situation and consult with agencies as appropriate.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Project personnel shall not collect or move any human remains or associated materials. If the human remains are of Native American origin, the Coroner must notify the California State Native American Heritage Commission (NAHC) within 24 hours of this identification. The NAHC will formally identify a Native American Most Likely Descendant (MLD)—if one is not already on-site—to inspect the site and provide recommendations for the proper treatment of the remains and associated grave goods. Such recommendations shall be carried out to the satisfaction of the NAHC prior to work resuming within 50 feet of the discovered remains.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Mitigation Measure CULT-4</b> A Burial Treatment Plan shall be entered into by the project applicant/property owner prior to any ground disturbing activities.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Geology and Soils</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <i>Will the project:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| b. Result in substantial soil erosion or the loss of topsoil?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| f. Directly or indirectly destroy a unique paleontological                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Mitigation Measures</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Mitigation Measure GEO-1</b> To reduce the potential for soil erosion during construction of the proposed project, an Erosion Control Plan shall be prepared for the project in conformance with the California Storm Water Best Management Practice Handbook for Construction Activity, prior to the start of grading.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Mitigation Measure GEO-2</b> The project applicant shall inform its contractor(s) of the sensitivity of the project area for paleontological resources. Should paleontological resources be encountered during project subsurface construction activities, all ground-disturbing activities within 25 feet shall be redirected and a qualified paleontologist contacted to assess the situation, consult with agencies as appropriate, and make recommendations for the treatment of the discovery. If found to be significant, and project activities cannot avoid the paleontological resources, adverse effects to paleontological resources shall be mitigated. Mitigation may include monitoring, recording the fossil locality, data recovery and analysis, a final report, and accessioning the fossil material and technical report to a paleontological repository. Public educational outreach may also be appropriate. Upon completion of the assessment, a report documenting methods, findings, and recommendations shall be prepared and submitted to the City for review, and (if paleontological materials are recovered) a paleontological repository, such as the University of California Museum of Paleontology (UCMP). The City shall verify that the above directive has been included in the appropriate contract documents. |
| <b>Greenhouse Gas Emissions</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <i>Will the project:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Mitigation Measures</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Mitigation Measure GHG-1</b> In order to meet the 2022 Scoping Plan greenhouse gas (GHG) requirements, consistent with State GHG reduction and equity prioritization goals, the proposed project shall provide electric vehicle charging capabilities that meet the most ambitious voluntary standard in the California Green Building Standards Code at the time of project approval as part of the final project design.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Hydrology and Water Quality</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <i>Will the project:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:</p> <ul style="list-style-type: none"> <li>i. Result in substantial erosion or siltation on- or off-site;</li> <li>ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite</li> <li>iii. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or</li> <li>iv. Impede or redirect flood flows?</li> </ul>           |
| <p>e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <p><b>Mitigation Measures</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <p><b>Mitigation Measure HYDRO-1</b> To minimize any potential short-term water quality effects from project-related construction activities, the project contractor shall implement Best Management Practices (BMPs) in conformance with the California Storm Water Best Management Practice Handbook for Construction Activity. In addition, the proposed project shall be in compliance with existing regulatory requirements, including the Water Pollution Control Preparation (WPCP) Manual. In addition, implementation of a Storm Water Pollution Prevention Plan (SWPPP) would be required under the National Pollutant Discharge Elimination System (NPDES) to regulate water quality associated with construction activities.</p> |
| <p><b>Mitigation Measure HYDRO-2</b> To reduce the potential for degradation of surface water quality during project operation, a Storm Water Management Plan (SWMP) shall be prepared for the proposed project. The SWMP shall describe specific programs to minimize storm water pollution resulting from the proposed project. Specifically, the SWMP shall identify and describe source control measures, treatment controls, and BMP maintenance requirements to ensure that the project complies with post-construction storm water management requirements of the Regional Water Quality Control Board (RWQCB).</p>                                                                                                                   |
| <p><b>Noise</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <p><i>Will the Project?</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <p>a. Cause generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <p><b>Mitigation Measure</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <p><b>Mitigation Measure NOI-1 Truck Movements.</b> All truck movements occurring during nighttime hours of 10:00 p.m. to 7:00 a.m. shall be required to use the Glendale Avenue access point only.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

**Mitigation Measure NOI-2** The project contractor shall implement the following measures during construction of the project:

- Per the City of Hanford Municipal Code, construction activities should not occur outside the hours of 7:00 a.m. to 8:00 p.m.
- All construction equipment shall be properly maintained and muffled as to minimize noise generation at the source.
- Noise-producing equipment shall not be operating, running, or idling while not in immediate use by a construction contractor.
- All noise-producing construction equipment shall be located and operated, to the extent possible, at the greatest possible distance from any noise-sensitive land uses.
- Locate construction staging areas, to the extent possible, at the greatest possible distances from any noise-sensitive land uses.
- Signs shall be posted at the construction site and near adjacent sensitive receptors displaying hours of construction activities and providing the contact phone number of a designated noise disturbance coordinator.

**Mitigation Measure NOI-3 Exterior Noise Levels.** The final design shall include a minimum 6.5- foot above-ground level sound wall around outdoor activity areas associated with the proposed hotel and apartment land uses to mitigate exterior noise levels to below 65 dB Ldn within these outdoor activity areas.

**Mitigation Measure NOI-4 Interior Noise Levels.** Once building-specific construction plans become available, interior noise levels should be reviewed and calculated by a qualified acoustical consultant to determine if additional noise attenuation mitigation measures are required to comply with interior noise level standards.

#### **Tribal Cultural Resources**

*Will the project:*

a. Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

- i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?  
Or
- ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

#### **Mitigation Measures**

See Mitigation Measures CULT-1 through CULT-4,

#### **Utilities and Service System**

*Will the project:*

Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

| Mitigation Measures            |
|--------------------------------|
| See Mitigation Measure HYDRO-1 |

## RESOLUTION 2025-06

**A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF HANFORD PERTAINING TO PLANNED UNIT DEVELOPMENT NO. 2022-01, PLANNED UNIT DEVELOPMENT NO. 2022-01: A REQUEST TO ALLOW BLENDED ZONING FOR A MASTER PLANNED MEDICAL AND MIXED-USE DEVELOPMENT, INCLUDING THE FUTURE CONSTRUCTION OF 15 BUILDINGS CONSISTING OF MEDICAL OUTPATIENT CLINIC SERVICES, A HOTEL AND CONFERENCE CENTER, SPECIALIZED EDUCATION, RETAIL, MEDICAL OFFICE, SKILLED NURSING AND ASSISTED LIVING, AND MULTI-FAMILY RESIDENTIAL USES, AS WELL AS A BIO INFILTRATION BASIN, ASSOCIATED OPEN SPACE, CIRCULATION AND PARKING, AND INFRASTRUCTURE IMPROVEMENTS. THE PROJECT IS LOCATED BETWEEN 11TH AND 12TH AVENUES ALONG GLENDALE DRIVE, NORTH OF HIGHWAY 198 (APN 011-060-007, 011-060-008, 012-290-040, 012-290-042, AND 012-290-054).**

At a regular meeting of the City of Hanford Planning Commission duly called and held on January 14, 2025 on motion of Commissioner , seconded by Commissioner , and duly carried, the following resolution was adopted:

**WHEREAS**, Planned Unit Development No. 2022-01, a request to allow blended zoning for a master planned medical and mixed-use development, including the future construction of 15 buildings consisting of medical outpatient clinic services, a hotel and conference center, specialized education, retail, medical office, skilled nursing and assisted living, and multi-family residential uses, as well as a bio infiltration basin, associated open space, circulation and parking, and infrastructure improvements, as shown in **Exhibit A**, has been reviewed by the Planning Commission of the City of Hanford in accordance with Title 17.82 of the Hanford Municipal Code; and

**WHEREAS**, the project is located between 11<sup>th</sup> and 12<sup>th</sup> Avenues along Glendale Drive, north of Highway 198 (APN 011-060-007, 011-060-008, 012-290-042, and 012-290-054); and

**WHEREAS**, the various governmental department agencies, staff, and the Planning Commission have given careful consideration to this tentative subdivision map and have made recommendations thereon; and

**WHEREAS**, the Initial Study, Mitigated Negative Declaration No. 2023-93, and all notices related thereto were prepared in compliance with the California Environmental Quality Act (CEQA) and the City of Hanford Municipal Code and Policies; and

**NOW THEREFORE, BE IT RESOLVED**, that the Planning Commission hereby recommends that the City Council of the City of Hanford find that no significant environmental impacts would result from the proposed project with the incorporation of mitigation measures, adopt a Mitigation and Monitoring Reporting Program, attached as **Exhibit B**, and certify that Mitigated Negative Declaration No. 2023-93 was prepared consistent with CEQA and City of Hanford Environmental Guidelines.

**THEREFORE, BE IT RESOLVED**, on the basis of the facts and evidence provided in the staff report and the written and oral evidence presented at the public hearing, the Planning Commission hereby makes the following findings pursuant to Section 17.82.060 of the Hanford Municipal Code:

1. That the location and design of the planned unit development is in accordance with the purpose of this title.

**Analysis:** Location - That in accordance with Section 17.82.050 of the Hanford Municipal Code, a planned unit development shall be a minimum five-acre site area, except that there shall be no minimum site area requirements if the site is an infill development site. The planned unit development pertains to a 39.16-acre development, which exceeds the minimum site area for a planned unit development.

Design and Purpose - That planned unit developments are encouraged to achieve a more functional, aesthetically pleasing, and harmonious living and working environment within the City, that otherwise might not be possible by strict adherence to the provisions of the municipal code. In certain instances, the objectives of the municipal code may be achieved by development that does not conform in all respects with the land use pattern designated on the zoning map or in the zone district prescribed. The planned unit development seeks to:

- ✓ A. To permit a site within more than one (1) zone district to mix the permitted or conditionally permitted land uses of both zones within the site without regard to the zone district boundary.
- ✓ C. To permit the lot patterns on size, shape, and layout that would otherwise not be permitted by the standards of the zone district in which the site is located;
- ✓ D. To modify the required building setbacks, distances between structures, and landscaped areas that would otherwise be required by this title
- ✓ E. To reduce the amount of required parking spaces when spaces are shared among multiple land uses.

The design of Planned Unit Development No. 2022-01 is consistent with the objectives of Section 17.82.

2. That the planned unit development is being proposed to achieve one or more of the objectives identified in Section 17.82.030.

**Analysis:** That the planned unit development is requested, in order to achieve the following objectives identified in Section 17.82.030:

- ✓ A. To permit a site within more than one (1) zone district to mix the permitted or conditionally permitted land uses of both zones within the site without regard to the zone district boundary.
- ✓ C. To permit the lot patterns on size, shape, and layout that would otherwise not be permitted by the standards of the zone district in which the site is located;
- ✓ D. To modify the required building setbacks, distances between structures, and landscaped areas that would otherwise be required by this title
- ✓ E. To reduce the amount of required parking spaces when spaces are shared among multiple land uses.

The design of Planned Unit Development No. 2022-01 is consistent with the objectives of Section 17.82.

3. That the location and design of the planned unit development and the conditions under which it would be operated or maintained will not be detrimental to the public health, safety, or welfare of the community to properties or improvements in the vicinity.

**Analysis:** Location - That in accordance with Section 17.82.050 of the Hanford Municipal Code, a planned unit development shall be a minimum five-acre site area, except that there shall be no minimum site area requirements if the site is an infill development site. The planned unit development pertains to a 39.16-acre development, which exceeds the minimum site area for a planned unit development.

Design and Purpose - That planned unit developments are encouraged to achieve a more functional, aesthetically pleasing, and harmonious living and working environment within the City, that otherwise might not be possible by strict adherence to the provisions of the municipal code. In certain instances, the objectives of the municipal code may be achieved by development that does not conform in all respects with the land use pattern designated on the zoning map or in the zone district prescribed. The planned unit development seeks to:

- ✓ A. To permit a site within more than one (1) zone district to mix the permitted or conditionally permitted land uses of both zones within the site without regard to the zone district boundary.
- ✓ C. To permit the lot patterns on size, shape, and layout that would otherwise not be permitted by the standards of the zone district in which the site is located;
- ✓ D. To modify the required building setbacks, distances between structures, and landscaped areas that would otherwise be required by this title
- ✓ E. To reduce the amount of required parking spaces when spaces are shared among multiple land uses.

Conditions of Operation – The Hanford Place Master Plan will function, as described in the Master Plan (**Attachment 1**).

Main objectives of the Master Plan include:

#### Zoning and Allowed Uses

Through the Planned Unit Development, the following uses shall be allowed by right. This would apply to all locations on the site and would not be limited by the conceptual site plan:

- All uses listed as permitted or conditionally permitted in the R-H High Density Residential Zone
- All uses listed as permitted or conditionally permitted in the C-S Service Commercial Zone
- Assisted living, skilled nursing, hospice



- College/university satellite campus
- Hotel
- Residence in the same building as a commercial or office use
- Urgent care clinic

The overall intensity of the total site would be limited by the intensity analyzed in the CEQA document. A higher intensity than that would require an amendment to the PUD. Land use locations are flexible and may change from the conceptual plan. The roadway alignments and ponding basin location would not change.

The included conceptual layout for the site has been prepared by Langdon Wilson Intl. Architecture. Individual sites may be developed independently of the Master Plan, allowing for building size, placement, and use to vary from the character in the illustrations. Revised layout plans would be followed up with specific site plans and parcel maps that would create the public right-of-way

### Design Conditions

In order for Hanford Place to have a consistent theme and to operate as a cohesive group of uses, the following design conditions are incorporated into the PUD:

1. Establish that cross-access and shared parking agreements are required for adjacent parcels as they are created prior to, or in conjunction with, parcel map or lot line adjustment approval;
2. Landscaping and lighting design shall be consistent between the sites in the PUD plan area;
3. Uses are not required to obey the zone boundary in the PUD plan area. Uses within the PUD plan area can be from either of the zones within the PUD plan area;
4. A block wall is not required within the PUD plan area between the zones.
5. Additional building setbacks are not required between the two zones within the PUD plan area. The C-S zone required setbacks shall apply to the entire PUD plan area.
6. The maximum building height for the PUD area shall be permit the C-S zone, which is 50 feet.
7. Buildings within the PUD plan area shall have a uniform/cohesive design type, with the exception of standalone residential or hotel buildings, which are not required to have similar design, but shall have compatible colors ad design elements. Elevation plans shall be submitted with site plans to confirm compliance. Standards shall be set by the first development in the PUD plan are for succeeding developments.
8. The number of on-site parking spaces shall be as follows:
  - a. Motel or hotel – 1 space per guest room plus 1 space per employee
  - b. Assisted living, skilled nursing facility, or hospice – 1 space for every 4 beds

- c. c. multifamily dwellings - at least 50% of spaces shall be covered
    - ii. one-bedroom - 1.5 spaces per dwelling unit
    - iii. two-bedroom - 1.75 spaces per dwelling unit
    - iv. three or more bedrooms - 2 spaces per dwelling unit
  - d. d. all other allowed uses - 1 space per 350 square feet of building space
9. A sign program shall be established prior to building permit approval for the first office or commercial use. The sign program would not apply to residential and hotel/motel uses, which would follow sign standards in the Zoning Ordinance.

All development will be reviewed during the Site Plan Review process when physical development is proposed.

4. That the location and design of the planned unit development will not generate more traffic than the streets in the vicinity can carry without congestion and will not overload utilities.

**Analysis:** The project has been reviewed in an initial study, for which a traffic impact study (TIS) was conducted.

The study area for the TIS included the following study intersections and roadway segments.

#### Intersections

1. 12th Avenue/Glendale Avenue
2. 12th Avenue/SR-198 westbound (WB) Ramps
3. 12th Avenue/SR-198 eastbound (EB) Ramps
4. Campus Drive/Lacey Boulevard
5. Campus Drive/7th Street
6. Campus Drive/6th Street
7. 11th Avenue/Lacey Boulevard
8. 11th Avenue /7th Street
9. 11th Avenue/6th Street
10. 11th Avenue/5th Street
11. 11th Avenue/4th Street-SR-198 WB On Ramp
12. 11th Avenue/3rd Street-SR-198 EB Off Ramp

#### Segments

1. Lacey Boulevard
  - 12th Avenue to Campus Drive
  - Campus Drive to 11th Avenue
  - 7th Street
  - Campus Drive to 11th Avenue
2. 6th Street
  - Campus Drive to 11th Avenue
3. Glendale Avenue

- East of 12th Avenue
- 4. 5th Avenue
  - West of 11th Avenue
- B. Campus Drive
  - Lacey Boulevard to Glendale Avenue

The TIS includes the LOS analysis for the following traffic scenarios:

- Existing Conditions
- Existing Plus Project
- Near-Term Plus Project
- Cumulative Year 2042 Without Project
- Cumulative Year 2042 Plus Project

The TIS concluded that the impact on traffic would be less than significant.

5. That the planned unit development's population density, site area and dimensions, site coverage, yard spaces, height of structures, distances between structures, off-street parking and off-street loading facilities, landscaped areas and street design will produce an environment of stable and desired character consistent with the purpose of this title.

**Analysis:** That the project has been evaluated for consistency with the requirements of Section 17.14 High-Density Residential zone district and 17.20 C-S Service Commercial zone district. All requirements for density, site area, dimensions, site coverage, open space, height of structures, distance between structures, off-street parking and loading facilities, and landscaped areas have been satisfied, except where expressly modified by the Hanford Place Master Plan (PUD 2022-01). The modifications proposed through the Hanford Place Master Plan will produce a cohesive design and an environment of stable and desired character consistent with the purpose of this title. The implementation of medical and mixed-use developments achieves several goals and policies of the General Plan, specifically Goals E1, L2, and L3, and Policies L38-41, L51-55, L11, L107, L135, L137 and P80.

6. That the combination of different dwelling types, architectural appearance, and/or varieties of land uses in the development will complement each other and harmonize with the existing and proposed land uses in the vicinity.

**Analysis:** The Hanford Place Master Plan proposes a medical and mixed-use development on an underutilized, infill parcel, proposed to be designated as C-S Service Commercial and R-H High-Density Residential. Through cohesive design, comprehensive design criteria, and medical-focused uses, with supportive residential, educational, and commercial uses, the Planned Unit Development proposes a design and combination of uses that will complement and harmonize across the zone districts proposed and achieve a goal of the General Plan to promote horizontal mixed-use development. The implementation of medical and mixed-use developments achieves several goals and policies of the General Plan, specifically Goals E1, L2, and L3, and Policies L38-41, L51-55, L11, L107, L135, L137 and P80.

**THEREFORE, BE IT RESOLVED** that Planned Unit Development No. 2022-01 be approved subject to Hanford Place Master Plan, and the conditions of approval, attached as **Exhibit C**.

## **EXPIRATION**

This Planned Unit Development permit shall become null and void two (2) years after the effective date of approval, unless, prior to the expiration, either a building permit is issued by the building official, and construction is commenced and diligently pursued toward completion on the property that was the subject of the approved permit or the use for which the permit was approved has commenced. When any planned unit development permit that is approved in conjunction with a tentative subdivision map or parcel map pursuant to Title 16, the planned unit development shall not expire unless the tentative subdivision map or parcel map also expires, and an extension of the tentative subdivision map or parcel shall be deemed to be an extension of the planned unit development permit. Prior to expiration of a permit, a person having authority to file an application may file a written request with the Community Development Director for extension of a permit that may otherwise expire. The request for extension will be taken to the Planning Commission, who may extend the expiration of the permit by one year.

**PASSED AND ADOPTED** at a regular meeting of the Planning Commission of the City of Hanford by the following vote:

AYES: Commissioners  
NOES: Commissioners  
ABSTAIN: Commissioners  
ABSENT: Commissioners

STATE OF CALIFORNIA)  
COUNTY OF KINGS )ss  
CITY OF HANFORD )

I, **Jason Waters**, Secretary of the City of Hanford Planning Commission, do hereby certify the foregoing Resolution was duly passed and adopted by the Planning Commission of the City of Hanford at a regular meeting thereof held on the 14<sup>th</sup> day of January, 2025.

Jason Waters, Secretary

**Exhibit A**  
Planned Unit Development No. 2022-01  
Hanford Place Master Plan



OWNER:  
**THE HANFORD GROUP**

# HANFORD PLACE

MEDICAL AND MIXED-USE PROPERTY



LANGDON WILSON  
INTERNATIONAL



PROJECT INTRODUCTION

The Hanford Group property is formed by three parcels:

|                  |             |
|------------------|-------------|
| Garavello Parcel | 23.35 Acres |
| Liebert Parcel   | 8.79 Acres  |
| Robinson Parcel  | 7.02 Acres  |

The proposed program is for structures that will cover Medical outpatient clinic services, Hospitality, Specialized Education, Retail, Medical Office, Skilled Nursing and Assisted Living, and Multi-family.



SITE CONTEXT

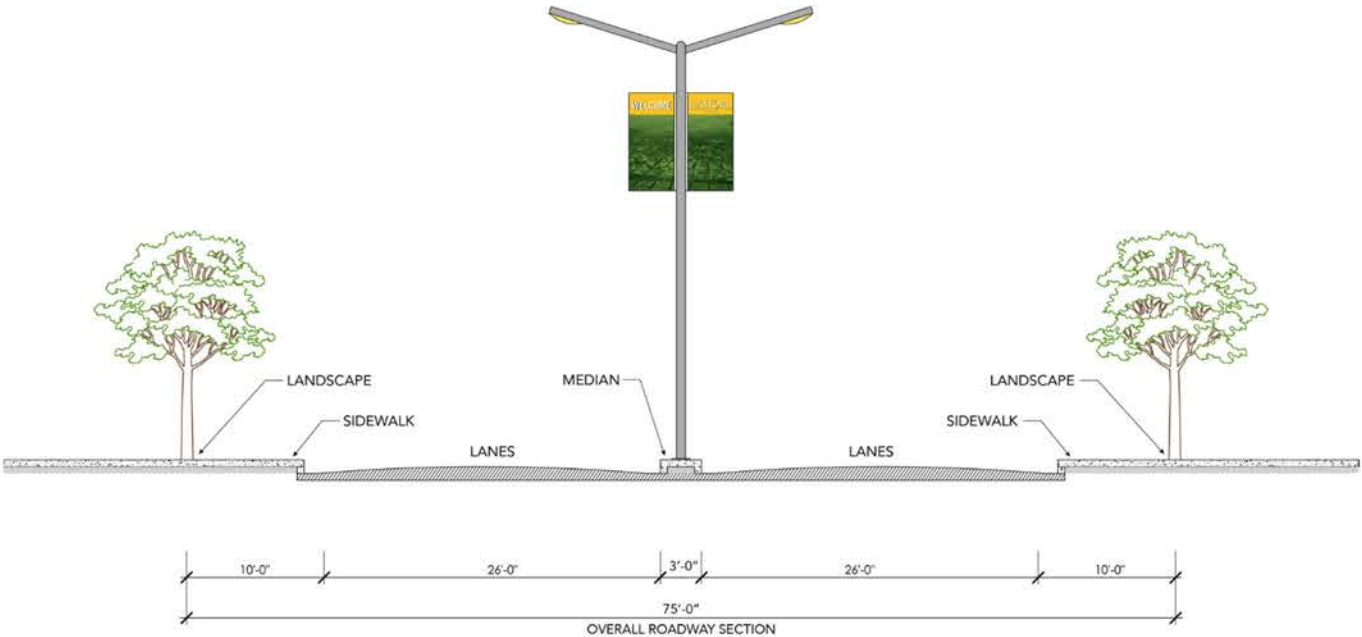
The site is bound by highway 198 and the SJV railroad. There is a 50 foot setback from the centerline of the railroad to the proposed buildings. 5th Street cuts across the property in an East West direction. Campus Drive creates an entry directly into the site. Adventist Health is to the northwest of the site. The People Ditch runs through this property and must maintain required setbacks and Hwy 198 makes up the southern boundary of the project.





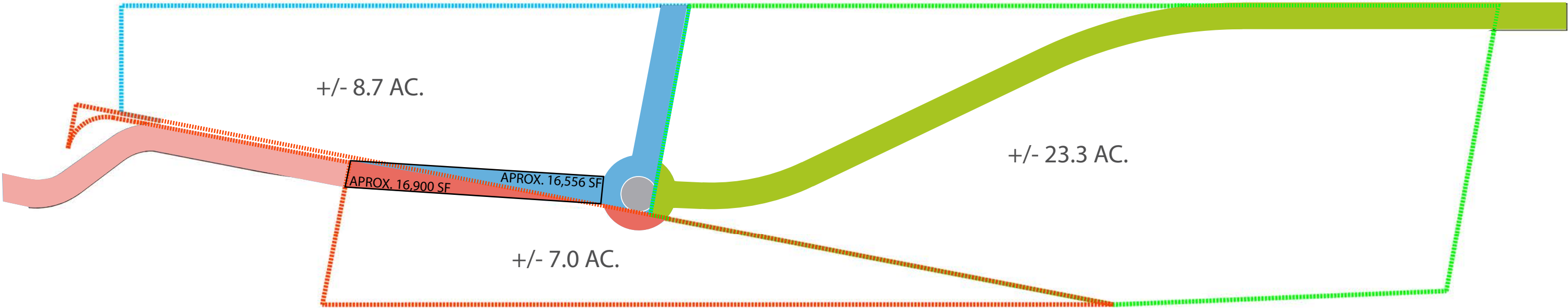
ROADWAY NETWORK

The proposed extension of Glendale Ave, 5th St. and Campus Dr. will be constructed to City standards and will be dedicated as public right of way. The proposed round a bout will also be public right of way and will be designed per Caltrans, or similar City approved, design standards. Typical City utilities (water, sewer and storm drain) will be constructed within the proposed right of way. As part of this proposal, Glendale Ave will be realigned at the northwest corner of the Hanford Veterinary Hospital development. The existing knuckle will be removed and Glendale will be realigned using speed specific design curves. Any new portion of Glendale Ave will be dedicated as public right of way and any portion of existing right of way not used will be abandoned. 5th St. will be extended starting on the existing alignment before realigning to the round a bout.



- BG ROAD
- SL RAOD
- ROB ROAD
- OFFSITE BG ROAD
- OFFSITE ROB ROAD

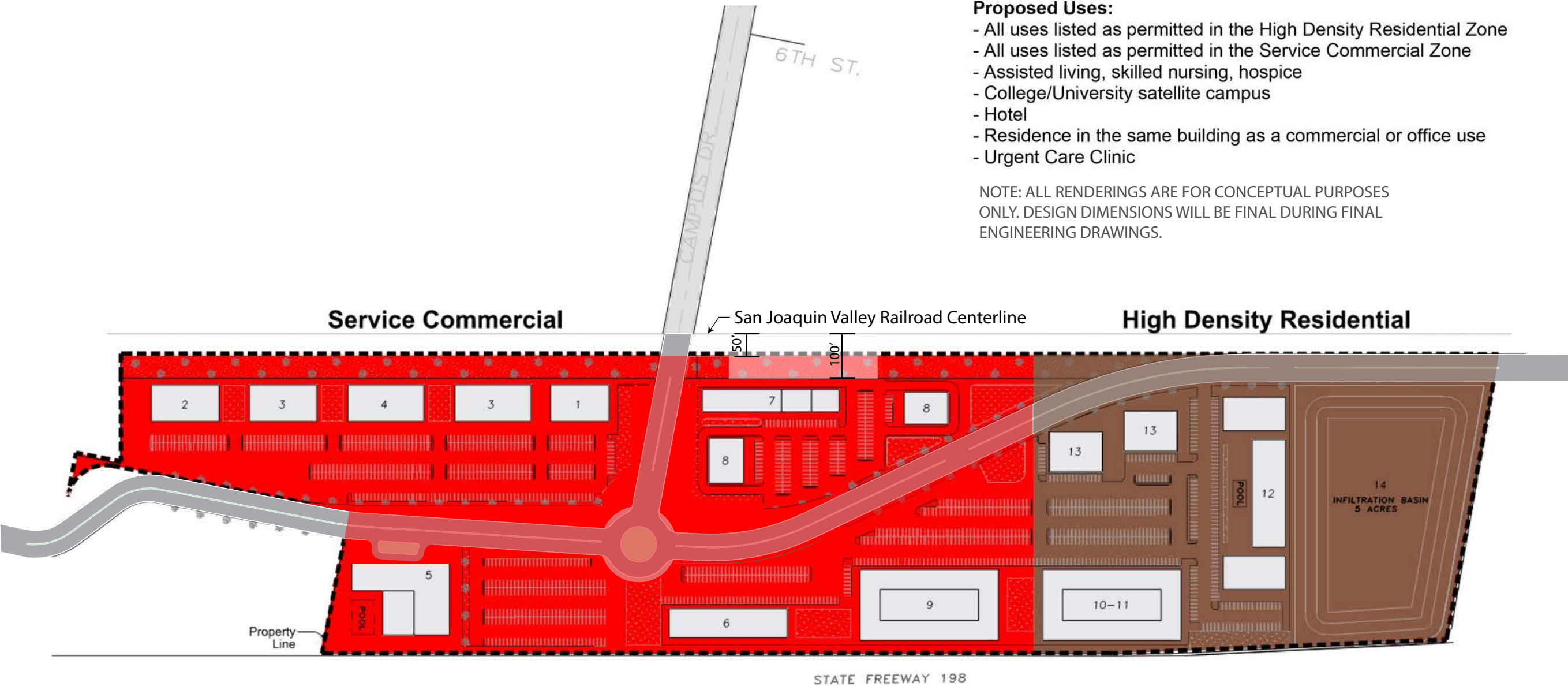
NOTE: ALL RENDERINGS ARE FOR CONCEPTUAL PURPOSES ONLY. DESIGN DIMENSIONS WILL BE FINAL DURING FINAL ENGINEERING DRAWINGS.





## VISUALS - SITE PLAN





**Proposed Uses:**

- All uses listed as permitted in the High Density Residential Zone
- All uses listed as permitted in the Service Commercial Zone
- Assisted living, skilled nursing, hospice
- College/University satellite campus
- Hotel
- Residence in the same building as a commercial or office use
- Urgent Care Clinic

NOTE: ALL RENDERINGS ARE FOR CONCEPTUAL PURPOSES ONLY. DESIGN DIMENSIONS WILL BE FINAL DURING FINAL ENGINEERING DRAWINGS.

| LEGEND                                                                  |                                                                                                     |                                                                               |                                                                       |
|-------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| 1. AMBULATORY SURGERY CENTER<br>2 LEVELS - 22,525 SF 4:1000             | 5. HOTEL & CONFERENCE CENTER<br>4 LEVELS - 100,000 SF -105 KEYS,<br>PARKING 1:ROOM + 1 PER EMPLOYEE | 7. STRIP RETAIL<br>1 LEVEL-4 UNITS - 15,500 SF 1:300                          | 11. ALF - ASSISTED LIVING FACILITY<br>1 LEVEL-34,380 SF 1:UNIT        |
| 2. SPECIALTY CLINIC<br>1 LEVEL - 12,445 SF 4:1000                       | 6. NURSING COLLEGE<br>2 LEVELS - 35,000 SF<br>PARKING 1 PER EMPLOYEE+ 10 PER                        | 8. RETAIL/DRIVE THRU/MEDICAL COMMERCIAL<br>1 LEVEL- 2UNITS - 15,000 SF 1:300  | 12. MULTIFAMILY APARTMENT<br>3 LEVELS - 1 BLOCKS - 90 TOTAL UNITS     |
| 3. MOB - MEDICAL OFFICE BUILDING<br>1 LEVEL - 12,445 SF/BLDG (2) 4:1000 | CLASSROOM(8-10 CLASSROOMS)                                                                          | 9. SNF - SKILLED NURSING FACILITY<br>2 LEVELS - 54,611 SF - 59 UNITS 1:4 BEDS | 13. MEDICAL/COMMERCIAL<br>1 LEVEL-2 BLDGS - 11,000 SF 4:1000 PER BLDG |
| 4. PHF - PSYCHIATRIC HEALTH FACILITY<br>1 LEVEL - 12,445 SF 1:4000      |                                                                                                     | 10. MEMORY CARE<br>1 LEVEL - 34,380 SF - 40 UNITS 1:4 BED                     | 14. BIO INFILTRATION BASIN<br>5.0 ACRES                               |



## ZONING AND ALLOWED USES

- The Zoning would change from existing Highway Commercial (C-H) to High Density Residential (R-H) and Service Commercial (C-S). (See map on previous page.)
- Through the Planned Unit Development (PUD), the following uses shall be allowed by right. This would apply to all locations on the site and would not be limited by the conceptual site plan.
  - All uses listed as permitted or conditionally permitted in the High Density Residential Zone R-H).
  - All uses listed as permitted or conditionally permitted in the Service Commercial Zone (C-S).
  - Assisted living, skilled nursing, hospice.
  - College/University satellite campus.
  - Hotel.
  - Residence in the same building as a commercial or office use.
  - Urgent Care Clinic.
- The overall intensity of the total site would be limited by the intensity analyzed in the CEQA document. A higher intensity than that would require an amendment to the PUD. Land use locations are flexible and may change from the conceptual plan. The roadway alignments and ponding basin location would not change.
- The included conceptual layout for the site has been prepared by Langdon Wilson Intl. Architecture. Individual sites may be developed independently of the Master Plan, allowing for building size, placement, and use to vary from the character in the illustrations.
- Revised layout plans would be followed up with specific site plans and parcel maps that would create the public ROW.

## DESIGN CONDITIONS

In order for Hanford Place to have a consistent theme and to operate as a cohesive group of uses, the following design conditions are incorporated into the PUD:

1. Establish that cross access and shared parking agreements are required for adjacent parcels as they are created prior to, or in conjunction with, parcel map or lot line adjustment approval.
2. Landscaping and lighting design shall be consistent between the sites in the PUD plan area.
3. Uses are not required to obey the zone boundary in the PUD plan area. Uses within the PUD plan area can be from either of the zones within the PUD plan area.
4. A block wall is not required within the PUD plan area between the zones.
5. Additional building setbacks are not required between the two zones within the PUD plan area. The C-S zone required setbacks shall apply to the entire PUD plan area.
6. The maximum building height for the PUD area shall be per the C-S zone, which is 50 feet.
7. Buildings within the PUD plan area shall have a uniform/cohesive design type, with the exception of standalone residential or hotel buildings, which are not required to have similar design but shall have compatible colors and design elements. Elevation plans shall be submitted with site plans to confirm compliance. Standards shall be set by the first development in the PUD plan area for succeeding developments.
8. The number of on-site parking spaces shall be as follows:
  - a. motel or hotel - 1 space per guest room plus 1 space per employee
  - b. assisted living, skilled nursing facility, or hospice - 1 space for every 4 beds
  - c. multifamily dwellings - at least 50% of spaces shall be covered
    - i. one-bedroom - 1.5 spaces per dwelling unit
    - ii. two-bedroom - 1.75 spaces per dwelling unit
    - iii. three or more bedrooms - 2 spaces per dwelling unit
  - d. all other allowed uses - 1 space per 350 square feet of building space
9. A sign program shall be established prior to building permit approval for the first office or commercial use. The sign program would not apply to residential and hotel/motel uses, which would follow sign standards in the Zoning Ordinance.



## VISUALS KEY PLAN

The following visuals are an example of the architecture and a conceptual artist's take on the look and feel of the development. They are not intended to be final Design and are merely to represent scale of the development.





CAMPUS ENTRY – VIEW 07





3 WAY ROUNDABOUT INTERSECTION AT CAMPUS AND 5TH



VIEW 08

VIEW 14





BIRDSEYE VEIW 10 LOOKING EAST FROM MEDICAL OFFICE AND CLINIC PARCELS





VEIW 11 LOOKING EAST FROM MEDICAL OFFICE AND CLINIC PARCELS





VEIW 11 LOOKING WEST TO MEDICAL OFFICE AND CLINIC PARCELS





EYE LEVEL VEIW 23 LOOKING WEST TO PHF BUILDING





EYE LEVEL VIEW 17 LOOKING WEST TO AMBULATORY SURGERY CENTER BUILDING





VEIW 21 LOOKING EAST FROM HOTEL PARKING





BIRDSEYE VIEW 09 LOOKING EAST TO ROUNDABOUT FROM HOTEL





EYE LEVEL VIEW 20 OF HOTEL





BIRDSEYE VIEW 01 LOOKING NORTH OVER ALF TO MEDICAL COMMERCIAL





BIRDSEYEE VIEW 02 LOOKING WEST TO SNF AND MEDICAL COMMERCIAL





EYE LEVEL VIEW 08 LOOKING WEST FROM ALF TO HOTEL





EYE LEVEL VIEW 25 MEDICAL COMMERCIAL





EYE LEVEL VIEW 22 LOOKING SOUTHWEST TO MULTIFAMILY





BIRDSEYE VIEW 04 LOOKING WEST TO RETAIL





BIRDSEYE VIEW 04 LOOKING WEST TO RETAIL





EYE LEVEL VIEW 13 OF RETAIL





EYE LEVEL VIEWS 16 AND 03 LOOKING WEST TO RETAIL



**Exhibit B**  
Mitigation Monitoring and Reporting Program



|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Biological Resources</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <i>Will the project:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Mitigation Measures</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <p><b>Mitigation Measure BIO-1</b> Conduct Preconstruction Clearance Surveys for San Joaquin Kit Fox and Burrowing Owl. A preconstruction clearance survey is required for San Joaquin kit fox and burrowing owl no more than 30 calendar days prior to initiation of project activities. All survey results must be delivered to the United States Fish and Wildlife Service's (USFWS), the California Department of Fish and Wildlife (CDFW), and the City. If the survey results find an active burrow of one or both of these species on the project site, the applicant must coordinate with the applicable resource agencies (CDFW for burrowing owl, CDFW and USFWS for kit fox) to obtain applicable agency approval(s)/permit(s) prior to any ground disturbance activities on the site.</p> <p>Specific avoidance, den excavation, passive relocation, and compensatory mitigation activities shall be performed as required by the applicable agency. Appropriate provisions of the CDFW Staff Report on Burrowing Owl Mitigation and USFWS Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox shall be adhered to.</p> |
| <p><b>Mitigation Measure BIO-2</b> Worker Environmental Awareness Training. Prior to initial groundbreaking, Worker Environmental Awareness Training shall be conducted by a qualified biologist to educate all construction personnel on the relevant federal, state, and local laws related to potentially occurring special-status species at the site. The tailgate session shall include training on identification of species that may be found on the project site, the status of those species, and any legal protection afforded to those species. Personnel will be advised to report any special-status species encountered promptly. A fact sheet conveying this information will be prepared for display or for distribution to anyone who may enter the project site.</p>                                                                                                                                                                                                                                                                                                                                                                           |
| <p><b>Mitigation Measure BIO-3</b> Construction Site Housekeeping and Operational Requirements. Habitat subject to permanent and temporary construction disturbances and other types of ongoing project-related disturbance activities shall be minimized by adhering to the following USFWS Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox:</p> <p>a) To minimize temporary disturbances, all project-related vehicle traffic shall be restricted to established roads, construction areas, and other designated areas. These areas shall also be included in preconstruction surveys and, to the extent possible, shall be established in locations disturbed by previous activities to prevent further impacts.</p>                                                                                                                                                                                                                                                                                                                                                                                                         |

b) Project-related vehicles shall observe a daytime speed limit of 20-mph throughout the site in all project sites, except on county roads and state and federal highways; this is particularly important at night when kit foxes are most active. Night-time construction shall be minimized to the extent possible. However, if it does occur, then the speed limit shall be reduced to 10-mph. Off-road traffic outside of designated project sites shall be prohibited.

c) To prevent inadvertent entrapment of kit foxes or other animals during the construction phase of a project, all excavated, steepwalled holes or trenches more than 2-feet deep shall be covered at the close of each working day by plywood or similar materials. If the trenches cannot be closed, one or more escape ramps constructed of earthen-fill or wooden planks shall be installed. Before such holes or trenches are filled, they shall be thoroughly inspected for trapped animals. If at any time a trapped or injured kit fox is discovered, the USFWS and the CDFW shall be contacted.

d) Kit foxes are attracted to den-like structures such as pipes and may enter stored pipes and become trapped or injured. All construction pipes, culverts, or similar structures with a diameter of 4-inches or greater that are stored at a construction site for one or more overnight periods shall be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a kit fox is discovered inside a pipe, that section of pipe shall not be moved until the USFWS and CDFW have been consulted. If necessary, and under the direct supervision of a qualified biologist, the pipe may be moved only once to remove it from the path of construction activity, until the fox has escaped. In the case of trapped animals, escape ramps or structures shall be installed immediately to allow the animal(s) to escape, or the USFWS and CDFW should be contacted for further guidance.

e) All food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in securely closed containers and removed at least once a week from a construction or project site.

f) Pets, such as dogs or cats, shall not be permitted on the project site to prevent harassment, mortality of kit foxes, or destruction of dens.

g) Use of rodenticides and herbicides in project sites shall be restricted. This is necessary to prevent primary or secondary poisoning of kit foxes and the depletion of prey populations on which they depend. All uses of such compounds shall observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and other state and federal legislation. If rodent control must be conducted, zinc phosphide should be used because of a proven lower risk to kit fox.

**Mitigation Measure BIO-4** Nesting Bird Surveys and Avoidance. If vegetation removal, construction, or grading activities are planned to occur within the active nesting bird season (February 15 through September 15), a qualified biologist shall conduct a preconstruction nesting bird survey no more than 5 days prior to the start of such activities. The nesting bird survey shall include the project site and areas immediately adjacent to the site that could potentially be affected by project-related activities such as noise, vibration, increased human activity, and dust, etc. For any active nest(s) identified, the qualified biologist shall establish an appropriate buffer zone around the active nest(s). The appropriate buffer shall be determined by the qualified biologist based on species, location, and the nature of the proposed activities. Project activities shall be avoided within the buffer zone until the nest is deemed no longer active by the qualified biologist.

**Mitigation Measure BIO-5** Agency Coordination for Peoples Ditch. Prior to any modifications to Peoples Ditch, it is recommended to consult with the United States Army Corps of Engineers (USACE), CDFW, and Regional Water Quality Control Board (RWQCB) to verify the feature's jurisdictional status and obtain applicable permit(s) and/or authorization(s). A notification of streambed alteration should be submitted to the CDFW in accordance with Section 1602 of the California Fish and Game Code. Unless categorically excluded under effective definitions or existing documentation confirms that no permit is needed, the Central Valley RWQCB and Sacramento District of the USACE should be consulted regarding potential permitting needs under the California Water Code and federal Clean Water Act, respectively, associated with the proposed Peoples Ditch modifications.

### **Cultural Resources**

#### *Will the project:*

Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Disturb any human remains, including those interred outside of formal cemeteries?

### **Mitigation Measures**

**Mitigation Measure CULT-1** Because of the very high sensitivity of the soil type in the project area, the possibility exists that buried archaeological deposits within the project site. Therefore, archaeological monitoring must be conducted during ground-disturbing construction activities in native soil, including clearing and grubbing. Monitoring should occur on a full-time basis during all excavation activities until the Project Archaeologist, based on the archaeological monitor's observations, is satisfied that there is little likelihood of encountering intact archaeological deposits. The Project Archaeologist may also determine it is appropriate to reduce monitoring to spot-checking or on a part-time basis. Upon completion of the monitoring and, if necessary, mitigation, the archaeologist should prepare a report to document the methods and results of the monitoring. The final report should be submitted to the SSJVIC.

**Mitigation Measure CULT-2** Additional mapping and subsurface testing of AE-4167-01 shall be conducted to evaluate its eligibility for inclusion in the California Register of Historical Resources, pursuant to California Public Resources Code (PRC) 5024.1. Additional focused subsurface testing in areas not previously disturbed by historic-era activities must be conducted to confirm presence/absence of high-sensitivity paleosols that may include intact prehistoric cultural deposits. If intact prehistoric cultural deposits are encountered during subsurface presence/absence testing, further investigation must be conducted to determine if the deposit retains integrity and is eligible for inclusion in the California Register of Historical Resources. The methods and findings of the additional studies would be presented as an addendum to the Cultural Resource Inventory for the Hanford Place Medical and Mixed-Use Property Project and would include cultural resource management recommendations to guide mitigation of potential adverse effects to any identified historical resources within the project area.

**Mitigation Measure CULT-3** Any human remains encountered during project-related ground disturbing activities shall be treated in accordance with California Health and Safety Code Section 7050.5. The project sponsor shall inform all contractor(s) performing excavation of the sensitivity of the project site for human remains and include the following directive in the appropriate contract documents: If human remains are uncovered, all work within 50 feet of the discovery shall be halted and the Kings County Coroner notified immediately. At the same time, the on-site monitoring archaeologist shall assess the situation and consult with agencies as appropriate.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Project personnel shall not collect or move any human remains or associated materials. If the human remains are of Native American origin, the Coroner must notify the California State Native American Heritage Commission (NAHC) within 24 hours of this identification. The NAHC will formally identify a Native American Most Likely Descendant (MLD)—if one is not already on-site—to inspect the site and provide recommendations for the proper treatment of the remains and associated grave goods. Such recommendations shall be carried out to the satisfaction of the NAHC prior to work resuming within 50 feet of the discovered remains.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Mitigation Measure CULT-4</b> A Burial Treatment Plan shall be entered into by the project applicant/property owner prior to any ground disturbing activities.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Geology and Soils</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <i>Will the project:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| b. Result in substantial soil erosion or the loss of topsoil?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| f. Directly or indirectly destroy a unique paleontological                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Mitigation Measures</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Mitigation Measure GEO-1</b> To reduce the potential for soil erosion during construction of the proposed project, an Erosion Control Plan shall be prepared for the project in conformance with the California Storm Water Best Management Practice Handbook for Construction Activity, prior to the start of grading.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Mitigation Measure GEO-2</b> The project applicant shall inform its contractor(s) of the sensitivity of the project area for paleontological resources. Should paleontological resources be encountered during project subsurface construction activities, all ground-disturbing activities within 25 feet shall be redirected and a qualified paleontologist contacted to assess the situation, consult with agencies as appropriate, and make recommendations for the treatment of the discovery. If found to be significant, and project activities cannot avoid the paleontological resources, adverse effects to paleontological resources shall be mitigated. Mitigation may include monitoring, recording the fossil locality, data recovery and analysis, a final report, and accessioning the fossil material and technical report to a paleontological repository. Public educational outreach may also be appropriate. Upon completion of the assessment, a report documenting methods, findings, and recommendations shall be prepared and submitted to the City for review, and (if paleontological materials are recovered) a paleontological repository, such as the University of California Museum of Paleontology (UCMP). The City shall verify that the above directive has been included in the appropriate contract documents. |
| <b>Greenhouse Gas Emissions</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <i>Will the project:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Mitigation Measures</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Mitigation Measure GHG-1</b> In order to meet the 2022 Scoping Plan greenhouse gas (GHG) requirements, consistent with State GHG reduction and equity prioritization goals, the proposed project shall provide electric vehicle charging capabilities that meet the most ambitious voluntary standard in the California Green Building Standards Code at the time of project approval as part of the final project design.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Hydrology and Water Quality</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <i>Will the project:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

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|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:</p> <ul style="list-style-type: none"> <li>i. Result in substantial erosion or siltation on- or off-site;</li> <li>ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite</li> <li>iii. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or</li> <li>iv. Impede or redirect flood flows?</li> </ul>           |
| <p>e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <p><b>Mitigation Measures</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <p><b>Mitigation Measure HYDRO-1</b> To minimize any potential short-term water quality effects from project-related construction activities, the project contractor shall implement Best Management Practices (BMPs) in conformance with the California Storm Water Best Management Practice Handbook for Construction Activity. In addition, the proposed project shall be in compliance with existing regulatory requirements, including the Water Pollution Control Preparation (WPCP) Manual. In addition, implementation of a Storm Water Pollution Prevention Plan (SWPPP) would be required under the National Pollutant Discharge Elimination System (NPDES) to regulate water quality associated with construction activities.</p> |
| <p><b>Mitigation Measure HYDRO-2</b> To reduce the potential for degradation of surface water quality during project operation, a Storm Water Management Plan (SWMP) shall be prepared for the proposed project. The SWMP shall describe specific programs to minimize storm water pollution resulting from the proposed project. Specifically, the SWMP shall identify and describe source control measures, treatment controls, and BMP maintenance requirements to ensure that the project complies with post-construction storm water management requirements of the Regional Water Quality Control Board (RWQCB).</p>                                                                                                                   |
| <p><b>Noise</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <p><i>Will the Project?</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <p>a. Cause generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <p><b>Mitigation Measure</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <p><b>Mitigation Measure NOI-1 Truck Movements.</b> All truck movements occurring during nighttime hours of 10:00 p.m. to 7:00 a.m. shall be required to use the Glendale Avenue access point only.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

**Mitigation Measure NOI-2** The project contractor shall implement the following measures during construction of the project:

- Per the City of Hanford Municipal Code, construction activities should not occur outside the hours of 7:00 a.m. to 8:00 p.m.
- All construction equipment shall be properly maintained and muffled as to minimize noise generation at the source.
- Noise-producing equipment shall not be operating, running, or idling while not in immediate use by a construction contractor.
- All noise-producing construction equipment shall be located and operated, to the extent possible, at the greatest possible distance from any noise-sensitive land uses.
- Locate construction staging areas, to the extent possible, at the greatest possible distances from any noise-sensitive land uses.
- Signs shall be posted at the construction site and near adjacent sensitive receptors displaying hours of construction activities and providing the contact phone number of a designated noise disturbance coordinator.

**Mitigation Measure NOI-3 Exterior Noise Levels.** The final design shall include a minimum 6.5- foot above-ground level sound wall around outdoor activity areas associated with the proposed hotel and apartment land uses to mitigate exterior noise levels to below 65 dB Ldn within these outdoor activity areas.

**Mitigation Measure NOI-4 Interior Noise Levels.** Once building-specific construction plans become available, interior noise levels should be reviewed and calculated by a qualified acoustical consultant to determine if additional noise attenuation mitigation measures are required to comply with interior noise level standards.

#### **Tribal Cultural Resources**

*Will the project:*

a. Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

- i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?  
Or
- ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

#### **Mitigation Measures**

See Mitigation Measures CULT-1 through CULT-4,

#### **Utilities and Service System**

*Will the project:*

Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

| Mitigation Measures            |
|--------------------------------|
| See Mitigation Measure HYDRO-1 |

**Exhibit C**  
Conditions of Approval



## **ADMINISTRATION DEPARTMENT**

Contact the City Attorneys' Office: (559) 584-6656

Concerning questions that you may have on the conditions listed below:

### **Defense and Indemnification Provisions:**

1. That the applicant shall defend, indemnify, and hold harmless the City of Hanford ("City"), its officials, officers, employees, representatives, agents and attorneys, from and against all claims, damages, losses, judgments, liabilities, expenses and other costs, including litigation costs and attorney's fees, arising out of, resulting from, or in connection with, the City's act or acts leading up to and including approval of any environmental document and/or granting of any approvals relating to the Project. Applicant's obligation to defend, indemnify and hold the City harmless specifically includes, but is not limited to, any suit or challenge by any third party against the City which challenges or seeks to set aside, void or annul the legality or adequacy of any environmental document approved by the City or any approval related to the Project.

### **PLANNING DIVISION**

**SITE PLAN NUMBER:** PUD 2022-01; CUP0019-23

**CONTACT:** Gabrielle Myers, Senior Planner (559) 585-2578

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**General Plan Designation:** Highway Commercial; Service Commercial and High-Density Residential proposed

**Zoning:** C-H Highway Commercial; C-S Service Commercial and R-H High-Density Residential proposed

**Other Special Districts:** Hanford Place Master Plan

### **Required Entitlements:**

1. General Plan Amendment
2. Rezone
3. Planned Unit Development (Master Plan)
4. Tentative Parcel Map (future) – Any future land divisions will require a Tentative Parcel Map application
5. Site Plan Review (future) – future development proposals will be evaluated through site plan review. Each site plan will be evaluated for consistency with the Hanford Place Master Plan and C-S or R-H standards where the plan is silent.

### **General Requirements:**

1. That approval of this project does not exempt compliance with all applicable sections of the Zoning Ordinance, Public Works Improvement Standards, fees, or other City Ordinances.
2. That all approved proposals of the applicant be conditions of development, if not mentioned herein.

3. That no expansion of the use which would tend to increase the projected scale of operations beyond the scope and nature described in this tentative tract shall be permitted except upon application for, and approval of, modification of this application according to all procedures and requirements thereof.
4. That if cultural resources are discovered during construction or related activities, all work shall be halted and a qualified archeologist and the City of Hanford shall be notified. The find shall be properly investigated and appropriate measures are to be taken before construction may continue.

**General:**

- ☒ That uses shall be permitted or not permitted, conditionally permitted, administratively permitted, or temporarily permitted as described on page 5 of the Hanford Place Master Plan and the land use tables in Sections [17.08.020](#) and [17.08.030](#) based on the base zone district, in which the use is located.
- ☒ That development conform to Hanford Place Master Plan and all applicable regulations of:
  - Section 17.14 for the High-Density Residential zone district; and
  - Section 17.18 for the Service Commercial zone district;

**R-H High-Density Residential Zone Requirements (all checked shall apply)**

**Dwelling Units per Lot** (Section 17.14.050)

- ☒ That the minimum site area per dwelling unit shall be 1,500 square feet.

**Coverage** (Section 17.14.060)

- ☒ That the maximum coverage of a lot shall be determined by the combined building setback area requirements, accessory structure limitations, open space requirements, and off-street parking.

**Building Setback Area** (Section 17.14.070) **modified by Master Plan, follow Master Plan Design Regulations**

- ☒ That no structure shall be placed within a building setback area.
- ☒ The front building setback area shall be 15 feet from the front lot line for livable space and 20 feet for garages, carports, and other non-livable building space.
- ☒ That the rear building setback shall be 15 feet from the rear lot line, except where there is a landscape easement with a wall or fence on the rear of the lot, then the rear building setback shall be 20 feet.
  - ☒ The rear building setback area shall be increased by 10 feet for buildings over one-story high.

- ☒ That where there is a landscape easement with a wall or fence on the street side of the lot the side yard setback area shall be measured from the easement area instead of the side lot line.

**Distances between Structures:** (Section 17.14.080)

- ☒ That the minimum distance between structures shall be 10 feet, except as provided by the building code.

**Height of Structures** (Section 17.14.090) **modified by Master Plan, follow Master Plan Design Regulations**

- ☒ That the maximum structure height shall be 35 feet.
- ☒ Exceptions to height limitations: penthouses or roof structures for the housing of elevators, stairways, tanks, ventilating fans, air-conditioning equipment, or similar equipment required to operate and maintain buildings, and fire and parapet walls, skylights, towers, spires, cupolas, road signs (where permitted), flagpoles, chimneys, smokestacks, televising and radio masts, or similar structures may be erected above the height limit, but shall not be allowed for the purpose of providing additional floor space.

**Usable Open Space** (Section 17.14.150)

- ☒ That lots with four or less dwelling units shall provide for a usable open space area of a minimum 300 square feet per dwelling unit. The open space shall be a minimum of 15 feet side.
- ☒ That lots with five or more dwelling units shall provide for a usable open space area equal to five percent of the lot area. Where multiple lots that together make up a single development site, the required open space may be combined into common open space areas that are accessible to all residents of the site.

**Off Street Parking:** (Section 17.54). **modified by Master Plan, follow Master Plan Design Regulations**

That the applicant shall provide **x (undetermined)** parking stalls on site (minimum), as shown on the approved site plan. Per the Hanford Municipal Code Section 17.54.040, parking shall be provided, as follows:

| Unit Type      | Parking Space Requirement | Measuring unit | # of Stalls Required | Total Covered |
|----------------|---------------------------|----------------|----------------------|---------------|
| Studio         | 1 space                   |                |                      |               |
| 1-bedroom unit | 1.5 spaces; 50% covered   |                |                      |               |
| 2-bedroom unit | 1.75 spaces; 50% covered  |                |                      |               |
| 3-bedroom unit | 2 spaces; 50% covered     |                |                      |               |

|                 |                         |  |  |  |
|-----------------|-------------------------|--|--|--|
| Community Space | 1 space per 300 sq. ft. |  |  |  |
| Total           |                         |  |  |  |

- ☒ That a minimum of **x (undetermined)** stalls shall be covered parking stalls.
- ☒ That the standard parking space shall not be less than 18.5 feet in length and nine feet in width, exclusive of aisles and access drives (Section 17.54.110 A).
- ☒ That the maximum number of compact-car parking spaces is limited to 30 percent of the total parking spaces required. A compact parking space shall not be less than 16 feet in length and 8 feet in width, and **marked for compact cars** (Section 17.54.110 B. and C).
- ☒ That there shall be no more than four compact spaces adjacent to each other.
- ☒ That parking for bicycles and low-emission vehicles shall be provided in accordance with the latest adopted version of the California Building Code (Section 17.54.190).
- ☒ That the required parking spaces may not be provided within any front, side, or rear building setback area.

**Signage:** (Section 17.56).

- ☒ That any/all signs proposed for this development shall be subject to the requirements and standards prescribed in Chapter 17.56 of the Hanford Municipal Code. **A separate application is required.**

**Fencing and Walls:** (Section 17.50.110 and 17.50.120). **modified by Master Plan, follow Master Plan Design Regulations**

- ☒ That fences and walls in the R-H zone district shall be constructed or installed in accordance with the following:
  - ☒ Along a rear lot line not exceeding seven feet in height
  - ☒ Along an interior side lot line not exceeding seven feet in height beginning at 10 feet from the front lot line.
- ☒ That any proposed fencing on the site be maintained in good repair.
- ☒ That no fence or wall shall be placed within the public right-of-way.
- ☒ That a masonry fence exceeding three (3) feet in height shall require engineered footings and a building permit. All other fencing exceeding seven (7) feet in height shall require engineered post footings and a building permit.
- ☒ That no hedge, shrub, fence, or wall exceeding the three (3) feet in height, or four (4) feet in height if the upper one (1) foot is fifty (50) percent or more open shall be planted, placed, or maintained within the twenty-five (25) feet corner sight triangle of a corner lot, or along a front

or street side property line where the hedge, shrub, fence, or wall creates a traffic or pedestrian hazard as determined by the Community Development Director.

**Landscaping:** (Section 17.52.060).

- ☒ General Design Standards: the following features shall be incorporated into the design of the proposed landscape and shown on the required landscape plans:
  - ☒ Publicly maintained landscape areas shall be separated from privately maintained landscape areas with, at a minimum, a four (4) inch wide concrete mow strip.
  - ☒ Pedestrian access to sidewalks and structures shall be integrated with the design of landscaped areas.
  - ☒ Landscape adjacent to driveways and parking areas shall be protected from vehicle damage through the provision of a minimum six (6) inch high and six (6) inch wide concrete curb.
  - ☒ Concrete mow strips, when used, shall be a minimum of four (4) inches in width.
  - ☒ Trees and shrubs shall be planted so that at maturity they do not interfere with utility lines and traffic safety sight areas.
  - ☒ Trees and shrubs shall be planted and maintained in a manner that protects the basic rights of adjacent property owners, particularly the right to solar access.
  - ☒ Trees planted within five (5) feet of sidewalks or curbs shall have an eighteen (18) inch by ten (10) foot long linear root barrier placed at each edge of the sidewalk or face of curb, centered on the tree.
- ☒ Plant materials. Plant materials shall be selected and installed in accordance with the following requirements:
  - ☒ The size of ten (10) percent of the trees to be planted shall be twenty-four (24) inch box or larger. The remaining trees shall be sized fifteen (15) gallons or larger.
  - ☒ The size of seventy (70) percent of plants and shrubs shall be at five (5) gallon or larger. The remaining plants and shrubs shall be sized one (1) gallon or larger.
  - ☒ The size of groundcover at planting shall be one (1) gallon or larger.
  - ☒ Groundcover shall be designed to have one hundred (100) percent coverage within two (2) years.
  - ☒ Drought tolerant plant material and climate appropriate species shall be emphasized in the design.
- ☒ That the landscaped area shall be planted with live and healthy plant materials suitable for screening/or ornamenting the site. Landscaped areas shall be watered by automatic systems and designed and developed in accordance with Chapter 12.08 and the most recent State Model Water Efficient Landscaped Ordinance.

- ☒ That no fence, hedge, or shrub shall be installed, planted, or maintained along a street frontage, which creates a traffic or pedestrian hazard.
- ☒ That all building setback areas and open space areas required which are visible from the public right-of-way shall be landscaped.

**Trash Collection Areas** (Section 17.50.090).

- ☒ That a suitable area shall be provided on-site for collection of trash and recyclable materials for all multi-family residential, mixed-use, commercial, office, and industrial uses. Refuse storage areas shall be adequately screened from view. The refuse area enclosure shall be designed to meet the minimum recommended dimensional standards as determined by the City Engineer.
- ☒ That all uses shall be in compliance with the provisions of Chapter 13.12 of the Municipal Code.
- ☒ That if fireplaces are proposed in the residential units, natural gas fireplaces or EPA-certified wood-burning fireplaces/stoves are to be installed in every unit that has a fireplace. Conventional open-hearth fireplaces are not allowed.
- ☒ That natural gas lines and electrical outlets be installed in backyards or patios to encourage use of gas and/or electric barbecues.
- ☒ That electrical outlets be installed around the exterior of the residential units to encourage use of electric lawn mowers, edgers, etc.

**Noise:**

- ☒ That construction equipment is muffled and construction activities be limited to the hours between 7:00 a.m. to 10:00 p.m., Monday through Friday, unless the construction is within the enclosed structure or approved by the Community Development Department.
- ☒ That noise from fixed mechanical equipment, when measured at the property line, meets the standard of the Hanford Noise Element.

**Rooftop Equipment** (Section 17.50.100)

- ☒ That all elevator housing and mechanical equipment located on the roof of any building shall be screened from adjacent views and contained within a completely enclosed penthouse or portion of the same building having walls and roofs with construction and appearance similar to the building.

**Outdoor Lighting Standards** (Section 17.50.140)

- ☒ That all lights and light fixtures, except public street lights, shall be located, aimed or shielded so as to minimize light trespassing across property boundaries or skyward.
- ☒ That no lights or light fixtures shall flash, revolve, blink or otherwise resemble a traffic control signal or operate in such a fashion to create a hazard for passing traffic.

- ☒ That building mounted lighting fixtures shall be attached only to the walls of the building. The top of a light fixture attached to a building wall shall not be higher than the top of the building parapet or the top of the roof eave, whichever is lower.
- ☒ That canopy ceiling light fixtures shall be recessed or the sides of the lens area shall be shielded in order to eliminate emission of horizontal light.
- ☒ That mercury vapor lamps shall be a fully shielded fixture with all light directed on-site.
- ☒ That freestanding light fixtures shall not exceed eighteen (18) feet in height measured from the top of a light fixture to the adjacent grade at the base of the support for that light fixture.

**Tents, Tarps, and Other Coverings** (Section 17.50.130)

- ☒ That no front or side building setback area shall be covered by tents, tarps, cloth, fabric, or a wood or metal covering or structure except for the following:
  - ☒ Standard window and door awnings
  - ☒ Ornamental covers, such as a sidewalk or entry awning trellis, or other similar improvement intended as an improved passageway or for aesthetic purposes providing architectural integrity with the building to which it is attached. Supports shall be ninety (90) percent open and shall not be enclosed.

**Dust Control:**

- ☒ That the appropriate dust-control practices of the San Joaquin Valley Air Pollution Control District shall be implemented.
- ☒ That the any necessary permits be obtained through the San Joaquin Valley Air Pollution Control District.

**The below are considered draft comments until final approval of the site plan**  
**C-S Service Commercial Checklist:** (all checked shall apply)

**General:**

- ☒ That approval of this project does not exempt compliance with all applicable sections of the Zoning Ordinance, Public Works Improvement Standards, fees, or other City Ordinances.
- ☒ That all approved proposals of the applicant be conditions of development, if not mentioned herein.
- ☒ That the site be developed according to the approved site plan, titled Site Plan Review No. 2018-06 with minor modifications to be approved by the Community Development Department.
- ☒ That no expansion of the use which would tend to increase the projected scale of operations beyond the scope and nature described in this Site Plan Review shall be permitted except upon application for, and approval of, modification of this application according to all procedures and requirements thereof.

### **Cultural Resources:**

- ☒ That if cultural resources are discovered during construction or related activities, all work shall be halted and a qualified archeologist and the City of Hanford shall be notified. The find shall be properly investigated and appropriate measures are to be taken before construction may continue.

### **Building Setback Areas (17.20.060) modified by Master Plan, follow Master Plan Design Regulations**

- ☒ That the appropriate setbacks be maintained, as follows:
  - ☒ The front building setback area shall be 15 feet, **except that in C-S zones bounded by SR 198, 10<sup>th</sup> Avenue, 11<sup>th</sup> Avenue, and Sixth Street there is no minimum front building setback requirement.**
  - ☒ The rear building setback shall be 15 feet, as the property abuts a PF zone district.
  - ☒ The side building setback shall be 15 along the north interior side property line, as the property abuts a PF zone district. **Since the building is existing, no change is required.**
  - ☐ The street side building setback shall be 15 feet.

### **Off Street Parking: (Section 17.54). modified by Master Plan, follow Master Plan Design Regulations**

- ☒ That the standard parking space shall not be less than 18.5 feet in length and nine feet in width, exclusive of aisles and access drives (Section 17.54.110 A).
- ☒ That the maximum number of compact-car parking spaces is limited to 30 percent of the total parking spaces required. A compact parking space shall not be less than 16 feet in length and 8 feet in width, and marked for compact cars (Section 17.54.110 B. and C).
- ☒ There shall be no more than four compact spaces adjacent to each other.
- ☒ That parking for bicycles and low-emission vehicles shall be provided in accordance with the latest adopted version of the California Building Code (Section 17.54.190).
- ☒ In the commercial zone district, not less than five percent of the interior square footage of a parking area shall be landscaped with trees and other plant materials suitable for ornamentation. **Parking areas are to have one tree placed at every four lineal parking stalls.**

### **Signage: (Section 17.56). modified by Master Plan, follow Master Plan Design Regulations**

- ☒ That any/all signs proposed for this development shall be subject to the requirements and prescribed in Chapter 17.56 of the Hanford Municipal Code. A separate application is required.



**Fencing and Walls:** (Section 17.20.130) **modified by Master Plan, follow Master Plan Design Regulations**

- ☒ That a block wall with a minimum height of seven feet shall be provided along any side or rear lot line that abuts an R-H, R-M, R-L, O, OR, PF zone district.
- ☒ That no fence or wall shall be placed in front of or within any landscaped area located next to a street.
- ☒ That the open storage of materials and equipment attendant to a use shall be permitted only within an area surrounded or screened by a solid wall or fence seven feet minimum in height.
- ☒ That any proposed fencing on the site be maintained in good repair.
- ☒ That no fence or wall shall be placed within the public right-of-way.
- ☒ That a masonry fence exceeding three (3) feet in height shall require engineered footings and a building permit. All other fencing exceeding seven (7) feet in height shall require engineered post footings and a building permit.
- ☒ That no hedge, shrub, fence, or wall exceeding the three (3) feet in height, or four (4) feet in height if the upper one (1) foot is fifty (50) percent or more open shall be planted, placed, or maintained within the twenty-five (25) feet corner sight triangle of a corner lot, or along a front or street side property line where the hedge, shrub, fence, or wall creates a traffic or pedestrian hazard as determined by the Community Development Director.

**Landscaping:** (Section 17.20.120 and 17.52).

- ☒ Landscaping shall be provided and permanently maintained in a setback area not less than 15 feet from a lot line adjoining a street, except where the setback area is covered by structures, parking, or driveways.
- ☒ General Design Standards: the following features shall be incorporated into the design of the proposed landscape and shown on the required landscape plans:
  - ☒ Publicly maintained landscape areas shall be separated from privately maintained landscape areas with, at a minimum, a four (4) inch wide concrete mow strip.
  - ☒ Pedestrian access to sidewalks and structures shall be integrated with the design of landscaped areas.
  - ☒ Landscape adjacent to driveways and parking areas shall be protected from vehicle damage through the provision of a minimum six (6) inch high and six (6) inch wide concrete curb.
  - ☒ Concrete mow strips, when used, shall be a minimum of four (4) inches in width.

- ☒ Trees and shrubs shall be planted so that at maturity they do not interfere with utility lines and traffic safety sight areas.
- ☒ Trees and shrubs shall be planted and maintained in a manner that protects the basic rights of adjacent property owners, particularly the right to solar access.
- ☒ Trees planted within five (5) feet of sidewalks or curbs shall have an eighteen (18) inch by ten (10) foot long linear root barrier placed at each edge of the sidewalk or face of curb, centered on the tree.
- ☒ Plant materials. Plant materials shall be selected and installed in accordance with the following requirements:
  - ☒ The size of ten (10) percent of the trees to be planted shall be twenty-four (24) inch box or larger. The remaining trees shall be sized fifteen (15) gallons or larger.
  - ☒ The size of seventy (70) percent of plants and shrubs shall be at five (5) gallon or larger. The remaining plants and shrubs shall be sized one (1) gallon or larger.
  - ☒ The size of groundcover at planting shall be one (1) gallon or larger.
  - ☒ Groundcover shall be designed to have one hundred (100) percent coverage within two (2) years.
  - ☒ Drought tolerant plant material and climate appropriate species shall be emphasized in the design.
- ☒ That the landscaped area shall be planted with live and healthy plant materials suitable for screening/or ornamenting the site. Landscaped areas shall be watered by automatic systems and designed and developed in accordance with Chapter 12.08 and the most recent State Model Water Efficient Landscaped Ordinance.
- ☒ That no fence, hedge, or shrub shall be installed, planted, or maintained along a street frontage, which creates a traffic or pedestrian hazard.

**Outdoor Lighting Standards** (Section 17.50.140)

- ☒ That all lights and light fixtures, except public street lights, shall be located, aimed or shielded so as to minimize light trespassing across property boundaries or skyward.
- ☒ That building mounted lighting fixtures shall be attached only to the walls of the building. The top of a light fixture attached to a building wall shall not be higher than the top of the building parapet or the top of the roof eave, whichever is lower.
- ☒ That the canopy ceiling light fixtures shall be recessed or the sides of the lens area shall be shielded, in order to eliminate emission of horizontal light.
- ☒ That the height of freestanding light fixtures, including freestanding parking lot fixtures, shall be measured from the top of a light fixture to the adjacent grade at the base of the support for that light fixture and shall not exceed 50 feet.

**Dust Control:**

- ☒ That the appropriate dust-control practices of the San Joaquin Valley Air Pollution Control District shall be implemented.
- ☒ That the any necessary permits be obtained through the San Joaquin Valley Air Pollution Control District.



OWNER:  
**THE HANFORD GROUP**

# HANFORD PLACE

MEDICAL AND MIXED-USE PROPERTY



LANGDON WILSON  
INTERNATIONAL



PROJECT INTRODUCTION

The Hanford Group property is formed by three parcels:

|                  |             |
|------------------|-------------|
| Garavello Parcel | 23.35 Acres |
| Liebert Parcel   | 8.79 Acres  |
| Robinson Parcel  | 7.02 Acres  |

The proposed program is for structures that will cover Medical outpatient clinic services, Hospitality, Specialized Education, Retail, Medical Office, Skilled Nursing and Assisted Living, and Multi-family.



SITE CONTEXT

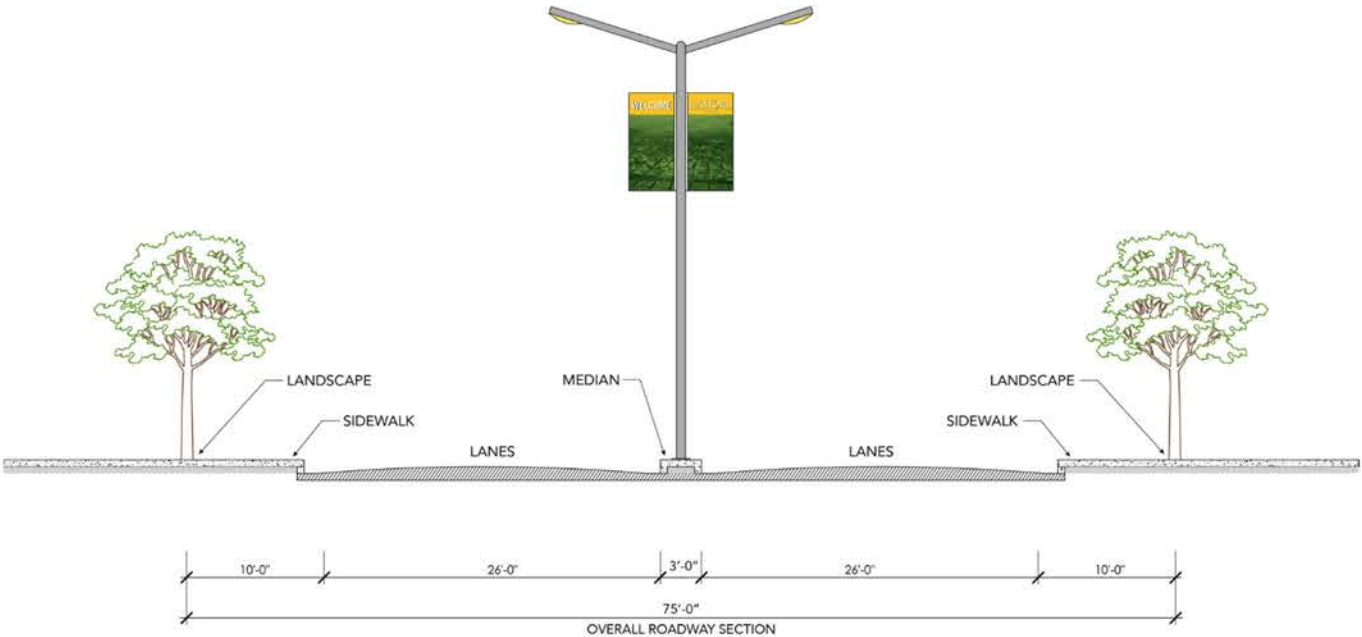
The site is bound by highway 198 and the SJV railroad. There is a 50 foot setback from the centerline of the railroad to the proposed buildings. 5th Street cuts across the property in an East West direction. Campus Drive creates an entry directly into the site. Adventist Health is to the northwest of the site. The People Ditch runs through this property and must maintain required setbacks and Hwy 198 makes up the southern boundary of the project.





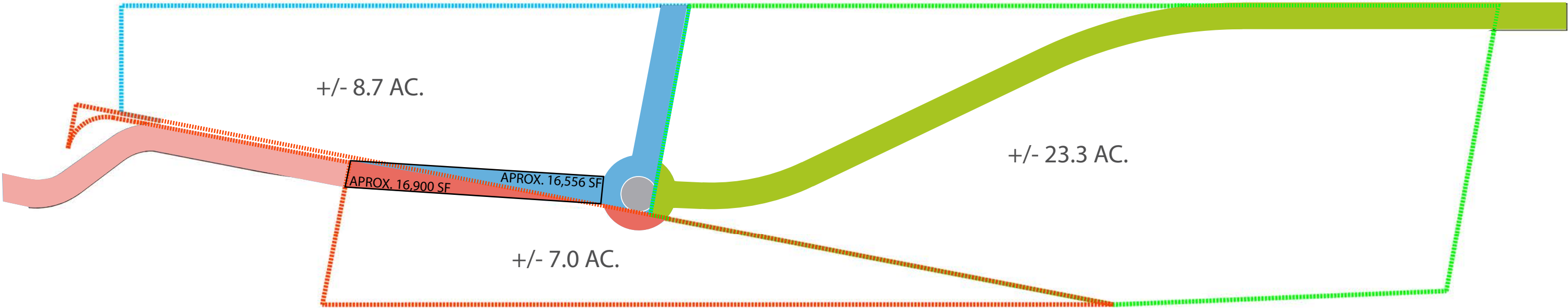
ROADWAY NETWORK

The proposed extension of Glendale Ave, 5th St. and Campus Dr. will be constructed to City standards and will be dedicated as public right of way. The proposed round a bout will also be public right of way and will be designed per Caltrans, or similar City approved, design standards. Typical City utilities (water, sewer and storm drain) will be constructed within the proposed right of way. As part of this proposal, Glendale Ave will be realigned at the northwest corner of the Hanford Veterinary Hospital development. The existing knuckle will be removed and Glendale will be realigned using speed specific design curves. Any new portion of Glendale Ave will be dedicated as public right of way and any portion of existing right of way not used will be abandoned. 5th St. will be extended starting on the existing alignment before realigning to the round a bout.



- BG ROAD
- SL RAOD
- ROB ROAD
- OFFSITE BG ROAD
- OFFSITE ROB ROAD

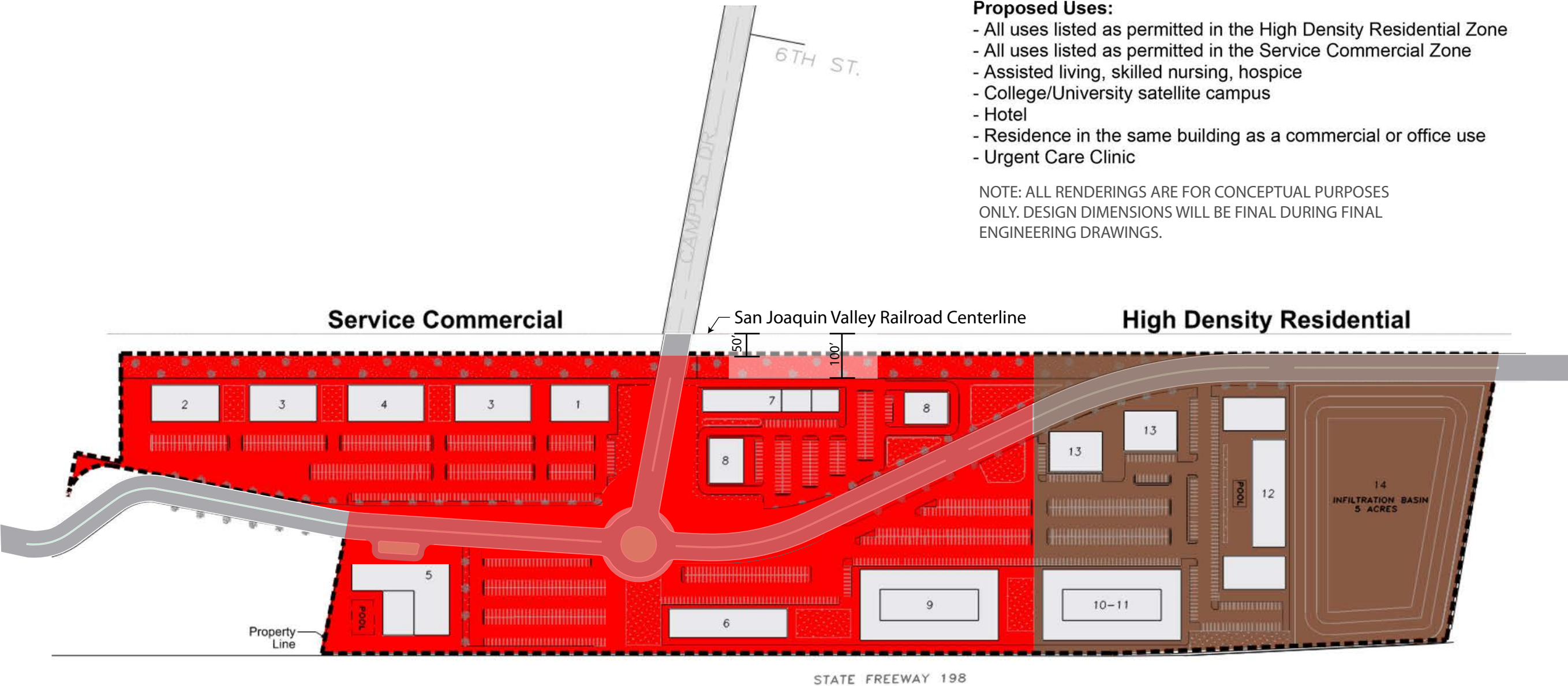
NOTE: ALL RENDERINGS ARE FOR CONCEPTUAL PURPOSES ONLY. DESIGN DIMENSIONS WILL BE FINAL DURING FINAL ENGINEERING DRAWINGS.



## VISUALS - SITE PLAN







**Proposed Uses:**

- All uses listed as permitted in the High Density Residential Zone
- All uses listed as permitted in the Service Commercial Zone
- Assisted living, skilled nursing, hospice
- College/University satellite campus
- Hotel
- Residence in the same building as a commercial or office use
- Urgent Care Clinic

NOTE: ALL RENDERINGS ARE FOR CONCEPTUAL PURPOSES ONLY. DESIGN DIMENSIONS WILL BE FINAL DURING FINAL ENGINEERING DRAWINGS.

| LEGEND                                                                  |                                                                                                     |                                                                               |                                                                       |
|-------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| 1. AMBULATORY SURGERY CENTER<br>2 LEVELS - 22,525 SF 4:1000             | 5. HOTEL & CONFERENCE CENTER<br>4 LEVELS - 100,000 SF -105 KEYS,<br>PARKING 1:ROOM + 1 PER EMPLOYEE | 7. STRIP RETAIL<br>1 LEVEL-4 UNITS - 15,500 SF 1:300                          | 11. ALF - ASSISTED LIVING FACILITY<br>1 LEVEL-34,380 SF 1:UNIT        |
| 2. SPECIALTY CLINIC<br>1 LEVEL - 12,445 SF 4:1000                       | 6. NURSING COLLEGE<br>2 LEVELS - 35,000 SF<br>PARKING 1 PER EMPLOYEE+ 10 PER                        | 8. RETAIL/DRIVE THRU/MEDICAL COMMERCIAL<br>1 LEVEL- 2UNITS - 15,000 SF 1:300  | 12. MULTIFAMILY APARTMENT<br>3 LEVELS - 1 BLOCKS - 90 TOTAL UNITS     |
| 3. MOB - MEDICAL OFFICE BUILDING<br>1 LEVEL - 12,445 SF/BLDG (2) 4:1000 |                                                                                                     | 9. SNF - SKILLED NURSING FACILITY<br>2 LEVELS - 54,611 SF - 59 UNITS 1:4 BEDS | 13. MEDICAL/COMMERCIAL<br>1 LEVEL-2 BLDGS - 11,000 SF 4:1000 PER BLDG |
| 4. PHF - PSYCHIATRIC HEALTH FACILITY<br>1 LEVEL - 12,445 SF 1:4000      | CLASSROOM(8-10 CLASSROOMS)                                                                          | 10. MEMORY CARE<br>1 LEVEL - 34,380 SF - 40 UNITS 1:4 BED                     | 14. BIO INFILTRATION BASIN<br>5.0 ACRES                               |



## ZONING AND ALLOWED USES

- The Zoning would change from existing Highway Commercial (C-H) to High Density Residential (R-H) and Service Commercial (C-S). (See map on previous page.)
- Through the Planned Unit Development (PUD), the following uses shall be allowed by right. This would apply to all locations on the site and would not be limited by the conceptual site plan.
  - All uses listed as permitted or conditionally permitted in the High Density Residential Zone R-H).
  - All uses listed as permitted or conditionally permitted in the Service Commercial Zone (C-S).
  - Assisted living, skilled nursing, hospice.
  - College/University satellite campus.
  - Hotel.
  - Residence in the same building as a commercial or office use.
  - Urgent Care Clinic.
- The overall intensity of the total site would be limited by the intensity analyzed in the CEQA document. A higher intensity than that would require an amendment to the PUD. Land use locations are flexible and may change from the conceptual plan. The roadway alignments and ponding basin location would not change.
- The included conceptual layout for the site has been prepared by Langdon Wilson Intl. Architecture. Individual sites may be developed independently of the Master Plan, allowing for building size, placement, and use to vary from the character in the illustrations.
- Revised layout plans would be followed up with specific site plans and parcel maps that would create the public ROW.

## DESIGN CONDITIONS

In order for Hanford Place to have a consistent theme and to operate as a cohesive group of uses, the following design conditions are incorporated into the PUD:

1. Establish that cross access and shared parking agreements are required for adjacent parcels as they are created prior to, or in conjunction with, parcel map or lot line adjustment approval.
2. Landscaping and lighting design shall be consistent between the sites in the PUD plan area.
3. Uses are not required to obey the zone boundary in the PUD plan area. Uses within the PUD plan area can be from either of the zones within the PUD plan area.
4. A block wall is not required within the PUD plan area between the zones.
5. Additional building setbacks are not required between the two zones within the PUD plan area. The C-S zone required setbacks shall apply to the entire PUD plan area.
6. The maximum building height for the PUD area shall be per the C-S zone, which is 50 feet.
7. Buildings within the PUD plan area shall have a uniform/cohesive design type, with the exception of standalone residential or hotel buildings, which are not required to have similar design but shall have compatible colors and design elements. Elevation plans shall be submitted with site plans to confirm compliance. Standards shall be set by the first development in the PUD plan area for succeeding developments.
8. The number of on-site parking spaces shall be as follows:
  - a. motel or hotel - 1 space per guest room plus 1 space per employee
  - b. assisted living, skilled nursing facility, or hospice - 1 space for every 4 beds
  - c. multifamily dwellings - at least 50% of spaces shall be covered
    - i. one-bedroom - 1.5 spaces per dwelling unit
    - ii. two-bedroom - 1.75 spaces per dwelling unit
    - iii. three or more bedrooms - 2 spaces per dwelling unit
  - d. all other allowed uses - 1 space per 350 square feet of building space
9. A sign program shall be established prior to building permit approval for the first office or commercial use. The sign program would not apply to residential and hotel/motel uses, which would follow sign standards in the Zoning Ordinance.



## VISUALS KEY PLAN

The following visuals are an example of the architecture and a conceptual artist's take on the look and feel of the development. They are not intended to be final Design and are merely to represent scale of the development.





CAMPUS ENTRY – VIEW 07





3 WAY ROUNDABOUT INTERSECTION AT CAMPUS AND 5TH



VIEW 08

VIEW 14





BIRDSEYE VEIW 10 LOOKING EAST FROM MEDICAL OFFICE AND CLINIC PARCELS





VEIW 11 LOOKING EAST FROM MEDICAL OFFICE AND CLINIC PARCELS





VEIW 11 LOOKING WEST TO MEDICAL OFFICE AND CLINIC PARCELS





EYE LEVEL VIEW 23 LOOKING WEST TO PHF BUILDING





EYE LEVEL VIEW 17 LOOKING WEST TO AMBULATORY SURGERY CENTER BUILDING





VEIW 21 LOOKING EAST FROM HOTEL PARKING





BIRDSEYE VIEW 09 LOOKING EAST TO ROUNDABOUT FROM HOTEL





EYE LEVEL VIEW 20 OF HOTEL





BIRDSEYE VIEW 01 LOOKING NORTH OVER ALF TO MEDICAL COMMERCIAL





BIRDSEYEE VIEW 02 LOOKING WEST TO SNF AND MEDICAL COMMERCIAL





EYE LEVEL VIEW 08 LOOKING WEST FROM ALF TO HOTEL





EYE LEVEL VIEW 25 MEDICAL COMMERCIAL





EYE LEVEL VIEW 22 LOOKING SOUTHWEST TO MULTIFAMILY





BIRDSEYE VIEW 04 LOOKING WEST TO RETAIL





BIRDSEYE VIEW 04 LOOKING WEST TO RETAIL





EYE LEVEL VIEW 13 OF RETAIL





EYE LEVEL VIEWS 16 AND 03 LOOKING WEST TO RETAIL





ADMINISTRATIVE DRAFT

**INITIAL STUDY/  
MITIGATED NEGATIVE DECLARATION**

**HANFORD PLACE PROJECT  
CITY OF HANFORD, CALIFORNIA**



**LSA**

March 2023

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**ADMINISTRATIVE DRAFT**

**INITIAL STUDY/  
MITIGATED NEGATIVE DECLARATION**

**HANFORD PLACE PROJECT  
CITY OF HANFORD, CALIFORNIA**

Submitted to:

QK  
907 East Main Street  
Visalia, California 93292

Prepared for:

City of Hanford  
317 N. Douty Street  
Hanford, California 93230

Prepared by:

LSA  
2656 Alluvial Avenue, Suite 172  
Clovis, California 93611  
(559) 490-1210

Project No. 20230872



March 2023

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## LIST OF ABBREVIATIONS AND ACRONYMS

|                   |                                                           |
|-------------------|-----------------------------------------------------------|
| AAQS              | Ambient Air Quality Standard                              |
| AB                | Assembly Bill                                             |
| BAAQMD            | Bay Area Air Quality Management District                  |
| Basin Plan        | Water Quality Control Plan                                |
| BMP               | Best Management Practices                                 |
| C-H               | Highway Commercial                                        |
| C-S               | Service Commercial                                        |
| CalEEMod          | California Emissions Estimator Model                      |
| CALGreen          | California Green Building Standards Code                  |
| Caltrans          | California Department of Transportation                   |
| CAP               | Climate Action Plan                                       |
| CARB              | California Air Resource Board                             |
| CDFW              | California Department of Fish and Wildlife                |
| CEC               | California Energy Commission                              |
| CEQA              | California Environmental Quality Act                      |
| CH <sub>4</sub>   | methane                                                   |
| City              | City of Hanford                                           |
| CNPS              | California Native Plant Society                           |
| CO                | carbon monoxide                                           |
| CO <sub>2</sub>   | carbon dioxide                                            |
| CO <sub>2</sub> e | CO <sub>2</sub> equivalents                               |
| County            | Kings County                                              |
| CRPR              | California Rare Plant Rank                                |
| dB                | decibel                                                   |
| DCP               | Dust Control Plan                                         |
| FHWA              | Federal Highway Administration                            |
| GAMAQI            | Guidance for Assessing and Mitigating Air Quality Impacts |
| GHG               | Greenhouse gas                                            |
| GWP               | Global Warming Potential                                  |



---

|                  |                                                   |
|------------------|---------------------------------------------------|
| HCM              | Highway Capacity Manual                           |
| HFCs             | Hydrofluorocarbons                                |
| IS/MND           | Initial Study/Mitigated Negative Declaration      |
| ITE              | Institute of Transportation Engineers             |
| $L_{dn}$         | day-night average level                           |
| LEED             | Leadership in Energy and Environmental Design     |
| $L_{eq}$         | equivalent continuous sound level                 |
| LOS              | Level of Service                                  |
| MLD              | Most Likely Descendant                            |
| mpg              | miles per gallon                                  |
| $N_2O$           | Nitrous oxide                                     |
| NAAQS            | National Air Quality Standards                    |
| $NO_2$           | nitrogen dioxide                                  |
| $NO_x$           | nitrogen oxide                                    |
| NPDES            | National Pollutant Discharge Elimination System   |
| NWIC             | Northwest Information Center                      |
| O                | Office Zoning                                     |
| $O_3$            | ozone                                             |
| Pb               | lead                                              |
| PFCs             | perfluorocarbons                                  |
| $PM_{10}$        | respirable particulate matter                     |
| $PM_{2.5}$       | fine particulate matter                           |
| PPV              | peak particle velocity                            |
| proposed project | Hanford Place Project                             |
| PUD              | Planned Unit Development                          |
| R-H              | High-Density Residential Zoning                   |
| ROG              | reactive organic gases                            |
| RPS              | State of California Renewable Portfolio Standards |
| RWQCB            | Regional Water Quality Control Board              |
| SB               | Senate Bill                                       |
| $SF_6$           | sulfur hexafluoride                               |

---

|                 |                                                 |
|-----------------|-------------------------------------------------|
| SJVAB           | San Joaquin Valley Air Basin                    |
| SJVAPCD         | San Joaquin Valley Air Pollution Control        |
| SO <sub>2</sub> | sulfur dioxide                                  |
| SR-198          | State Route 198                                 |
| SRA             | State responsibility area                       |
| State           | State of California                             |
| SWPPP           | Storm Water Pollution Prevention Plan           |
| TACs            | toxic air contaminants                          |
| UCMP            | University of California Museum of Paleontology |
| USGS            | United States Geological Survey                 |
| UWMP            | Urban Water Management Plan                     |
| VMT             | vehicle miles traveled                          |
| ZE              | zero emission                                   |

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## 1.0 PROJECT INFORMATION

**1. Project Title:**

Hanford Place Project

**2. Lead Agency Name and Address:**

City of Hanford  
317 N. Douty Street  
Hanford, CA 93230

**3. Contact Person and Phone Number:**

Gabrielle Myers, Senior Planner  
City of Hanford Community Development, Planning Division  
(559) 585-2578

**4. Project Location:**

The project site is located between State Route 198 (SR-198) and the San Joaquin Valley Railroad in the City of Hanford (City), in Kings County (County). 5th Street cuts through the project site in an east/west direction and Campus Drive cuts through the project in a north/south direction. In addition, the Peoples Ditch runs through the project site.

**5. Project Sponsor's Name and Address:**

Steve Brandt  
QK  
901 East Main Street  
Visalia, CA 93292

**6. General Plan Designation:**

Highway Commercial (C-H)

**7. Zoning:**

Highway Commercial (C-H)

**8. Description of Project:**

The proposed project would develop a medical and mixed-use development including the construction of 15 buildings consisting of medical outpatient clinic services, a hotel and conference center, specialized education, retail, medical office, skilled nursing and assisted living, and multi-family residential uses, as well as a bio infiltration basin, associated open space, circulation and parking, and infrastructure improvements.

**9. Surrounding Land Uses and Setting:**

The project site is located in an area with a mix of land uses, including residential, commercial, and medical uses. Adjacent parcels consist mostly of low-density residential and commercial uses, with several undeveloped lots located north of the project site.

**10. Other Public Agencies Whose Approval is Required (e.g., permits, financial approval, or participation agreements):**

The proposed project would include, but not be limited to, the following regulatory requirements:

- City (e.g., approval of General Plan Amendment, Zone Change, and building permits)
- Central Valley Regional Water Quality Control Board Storm Water Pollution Prevention Plan
- San Joaquin Valley Air Pollution Control District (e.g., Dust Control Plan Approval letter and compliance with Rule 9510 – Indirect Source Review)
- California Department of Fish and Wildlife Notification of Streambed Alteration pursuant to Section 1602 of the California Fish and Game Code

**11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resource Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?**

California Native American tribes traditionally and culturally affiliated with the project site and area were notified of the proposed project on August 5, 2020. Follow-up contact by email and telephone was completed on August 13, 2020. No responses have been received to date.

## 2.0 PROJECT DESCRIPTION

The following describes the proposed Hanford Place Project (proposed project). This section includes a summary description of the project location and existing site characteristics, required approvals, and entitlements. The City is the lead agency for review of the project under the California Environmental Quality Act (CEQA).

### 2.1 PROJECT SITE

The following section describes the location and characteristics of the project site. This section also provides a brief overview of the existing land uses within the vicinity of the project site.

#### 2.1.1 Location

The 39.23-acre vacant project site is comprised of four parcels and is located between State Route 198 (SR-198) and the San Joaquin Valley Railroad in the City, in Kings County (County). 5th Street cuts through the project site in an east/west direction and Campus Drive cuts through the project in a north/south direction. In addition, the Peoples Ditch runs through the project site.

The project site is generally bound to the north by the San Joaquin Valley Railroad and existing mixed-use structures, including commercial, medical, retail, and some residential uses, to the east by commercial land uses, to the south by SR-198, and to the west by commercial land uses. Regional access to the site is provided by SR-198, which is located adjacent to the southern border of the project site. Figure 1 shows the site's regional and local context. Figure 2 depicts an aerial photograph of the project site and surrounding land uses.

#### 2.1.2 Existing Setting

The project site is primarily flat and is fallow and disturbed with no existing structures. The project site was previously used for agriculture, consistent with many of the surrounding lands in the region. The project site is located in an area with a mix of land uses, including residential, commercial, and medical uses. Adjacent parcels consist mostly of low-density residential and commercial uses, with several undeveloped lots located north of the project site.

The General Plan designation for the project site is currently C-H and the current zoning designation for the project site is C-H.

### 2.2 PROPOSED PROJECT

This section provides a description of the proposed project as identified in the project applicant's proposal materials and site plan, dated September 30, 2019.<sup>1</sup> The proposed project would develop a medical and mixed-use development and would construct 15 buildings consisting of medical outpatient clinic services, a hotel and conference center, specialized education, retail, medical

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<sup>1</sup> The Hanford Group. 2019. *Hanford Place Medical and Mixed Use-Property Proposal*.

office, skilled nursing and assisted living, and multi-family residential uses, as well as a bio infiltration basin, associated open space, circulation and parking, and infrastructure improvements.

The proposed project would include the extension of Glendale Avenue, 5th Street, and Campus Drive, which would be dedicated as public right of way. The proposed project would also construct a roundabout, which would also be dedicated as public right of way. As part of the project, Glendale Avenue would also be realigned and any portion of existing right of way not used would be abandoned. In addition, the proposed project would convert the Peoples Ditch to an underground pipeline. Individual project components are further described below.

### 2.2.1 Project Characteristics

The proposed project would include the following: a 22,525-square-foot ambulatory surgery center; a 12,445-square-foot specialty clinic; two 12,445-square-foot medical office buildings; a 12,445-square-foot psychiatric health facility; a 100,000-square-foot, a four-story 105-room hotel with a conference center and pool; a 35,000-square-foot nursing college; a 54,611-square-foot skilled nursing facility; a 34,480-square-foot memory care facility; a 34,380-square-foot assisted living facility; a three-story 90-unit multi-family apartment; 41,500 square feet of medical/commercial uses; and a 5-acre bio infiltration basin. Table 2.A depicts the proposed buildings and their characteristics. Figure 3 shows the project site plan.

**Table 2.A: Building Characteristics**

| Building                    | Total Square Feet | Number of Units | Stories |
|-----------------------------|-------------------|-----------------|---------|
| Ambulatory Surgery Center   | 22,525            | -               | 2       |
| Specialty Clinic            | 12,445            | -               | 1       |
| Medical Office Building     | 24,890            | 2 buildings     | 1       |
| Psychiatric Health Facility | 12,445            | -               | 1       |
| Hotel and Conference Center | 100,000           | 105 rooms       | 4       |
| Nursing College             | 35,000            | 8-10 classrooms | 2       |
| Skilled Nursing Facility    | 54,611            | 59 units        | 2       |
| Memory Care                 | 34,480            | 40 units        | 1       |
| Assisted Living Facility    | 34,380            | -               | 1       |
| Multi-Family Apartment      | 76,500            | 90 units        | 3       |
| Medical/Commercial          | 41,500            | -               | 1       |

Source: The Hanford Group (2019).

As identified above, the proposed project would include a total of 90 residential units (approximately 76,500 square feet). Units would average 850 square feet, with 72 two-bedroom, two-bathroom units (80 percent of units), 14 one-bedroom, one-bathroom units (15 percent), and 4 three-bedroom, two-bathroom units (5 percent). In addition, the proposed project would provide outdoor space and amenities, including a dog park and a pool.

The proposed project would comply with the latest CALGreen standard building measures and Title 24 standards with some buildings being constructed to meet Leadership in Energy and Environmental Design (LEED) certifications. In addition, approximately 35 to 40 percent of the project's square footage would be covered by solar.

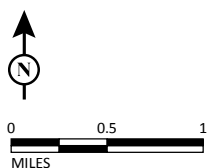




LSA

LEGEND

Project Site



SOURCE: Esri World Street Map (2020); National Geographic (2020).

I:\EPI2001\GIS\Maps\Figure 1\_Regional Location.mxd (4/13/2020)

FIGURE 1

*Hanford Place Project*  
*Hanford, Kings County, California*  
**Regional Location**

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LSA

LEGEND

Project Site



0 250 500  
FEET

SOURCE: Google Aerial Imagery (2020).

I:\EPI2001\GIS\Maps\Figure 2\_Project Location.mxd (5/11/2020)

FIGURE 2

*Hanford Place Project*  
*Hanford, Kings County, California*  
**Project Location**

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FIGURE 3

LSA



SOURCE: LANGDON WILSON INTERNATIONAL, 2020.

FRE10\P:\EPI2001 Hanford Place\PRODUCTS\Figure\_3.ai (4/22/2020)

Hanford Place Project  
Hanford, Kings County, California  
Site Plan

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### 2.2.2 General Plan and Zoning Designation

The General Plan designation for the project site is currently Highway Commercial; however, the project would amend the General Plan to Service Commercial and High-Density Residential. In addition, the current zoning designation for the project site is C-H; however, the project would require a rezone to Service Commercial (C-S) and High-Density Residential (R-H) with a Planned Unit Development (PUD) overlay that would allow uses allowed on the entire project site. This zoning designation and PUD would allow uses from both zones to be constructed anywhere on the project site, which could result in location changes of buildings shown on Figure 3.

### 2.2.3 Access and Circulation

Vehicular access to the site would be provided by Glendale Avenue, 5th Street, and Campus Drive. The extension of these roadways would be constructed to City standards and would be dedicated as public right of way. The proposed project would also construct a roundabout, which would also be dedicated as public right of way and would be constructed to Caltrans or City-approved standards. As part of the project, Glendale Avenue would be realigned at the northwest corner of the Hanford Veterinary Hospital development. The existing knuckle would be removed, and Glendale Avenue would be realigned using speed-specific design curves. Any new portions of Glendale Avenue would be dedicated as public right of way and any portion of existing right of way not used would be abandoned. 5th Street would be extended starting at the existing alignment before realigning to the roundabout. In addition, the proposed project would provide 1,466 parking spaces throughout the project site.

### 2.2.4 Open Space and Landscaping

Consistent with City requirements, open space and drought-tolerant landscaping would be provided throughout the project site.

### 2.2.5 Utilities

Utilities required to serve the proposed project would include water, sanitary sewer, storm water drainage, electricity, natural gas, and telecommunications infrastructure. Water service, sewage disposal, and refuse collection would be provided by the City. In addition, all City utilities (i.e., water, sewer, and storm drain) would be constructed within the proposed right of way. Storm drainage would be collected by an underground conveyance system and delivered to the onsite bio infiltration basin. The basin would be privately held by the owners and would collect both the proposed project and the City right of way. All storm drain facilities would be designed to City standards.

The proposed project would also convert the Peoples Ditch to a 66-inch-diameter below-ground pipeline where the ditch currently exists and would terminate approximately 20 feet short of the existing pipeline that runs under SR-198. The depth of the below-ground pipeline would be between two and six feet.

The proposed project would also require electrical, natural gas, telephone, and cable improvements. Electricity would be provided by Southern California Edison; natural gas would be provided by



Southern California Gas; and telephone services would be provided by AT&T. The extent of work required for utilities and gas would be determined during final project design.

#### **2.2.6 Construction**

The proposed project would be constructed in three phases and is anticipated to begin March 2024. Construction is anticipated to last approximately 3 years. The proposed project would comply with City standards, including the City's current building code, landscape standards, and lighting standards. In addition, the proposed project would be graded similar to other developments throughout the City. The proposed project would require between 50,000 to 90,000 cubic yards of soil moved throughout the site and may require re-compaction in place and over excavation. Over excavation would be between 30,000 and 60,000 cubic yards of soil.

### 3.0 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a “Potentially Significant Impact” as indicated by the checklist in Chapter 3.0.

- |                                                    |                                                             |                                                             |
|----------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|
| <input type="checkbox"/> Aesthetics                | <input type="checkbox"/> Agriculture and Forestry Resources | <input type="checkbox"/> Air Quality                        |
| <input type="checkbox"/> Biological Resources      | <input type="checkbox"/> Cultural Resources                 | <input type="checkbox"/> Energy                             |
| <input type="checkbox"/> Geology/Soils             | <input type="checkbox"/> Greenhouse Gas Emissions           | <input type="checkbox"/> Hazards & Hazardous Materials      |
| <input type="checkbox"/> Hydrology/Water Quality   | <input type="checkbox"/> Land Use/Planning                  | <input type="checkbox"/> Mineral Resources                  |
| <input type="checkbox"/> Noise                     | <input type="checkbox"/> Population/Housing                 | <input type="checkbox"/> Public Services                    |
| <input type="checkbox"/> Recreation                | <input type="checkbox"/> Transportation                     | <input type="checkbox"/> Tribal Cultural Resources          |
| <input type="checkbox"/> Utilities/Service Systems | <input type="checkbox"/> Wildfire                           | <input type="checkbox"/> Mandatory Findings of Significance |

### 3.1 DETERMINATION

On the basis of this initial evaluation:

- ☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- ☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- ☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- ☐ I find that the proposed project MAY have a “Potentially Significant Impact” or “Potentially Significant Unless Mitigated” impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- ☒ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature

Date

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## 4.0 CEQA ENVIRONMENTAL CHECKLIST

### 4.1 AESTHETICS

|                                                                                                                                                                                                                                                                                                                                                                               | Potentially<br>Significant<br>Impact | Less Than<br>Significant with<br>Mitigation<br>Incorporated | Less Than<br>Significant<br>Impact  | No<br>Impact                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------------------------|-------------------------------------|-------------------------------------|
| Except as provided in Public Resources Code Section 21099, would the project:                                                                                                                                                                                                                                                                                                 |                                      |                                                             |                                     |                                     |
| a. Have a substantial adverse effect on a scenic vista?                                                                                                                                                                                                                                                                                                                       | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway                                                                                                                                                                                                                       | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| c. In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality? | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?                                                                                                                                                                                                                                                         | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |

#### a. *Would the project have a substantial effect on a scenic vista?*

The vacant, undeveloped project site is located in an area with a mix of land uses, including residential, commercial, and medical uses. Adjacent parcels consist mostly of low-density residential and commercial uses, with several undeveloped lots located north of the project site. The Peoples Ditch, an irrigation canal dug in the 1870s, runs through the project site. There are no significant trees, rock outcroppings, and/or historic buildings located on the subject property that have been identified as important scenic resources. Therefore, the proposed project would not diminish the scenic views of the project area and would likewise not block or impede surrounding views. Therefore, the proposed project would not result in a substantial adverse effect on a scenic vista. This impact would be less than significant, and no mitigation is required.

#### b. *Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?*

The California Department of Transportation (Caltrans) manages the State Scenic Highway Program. The State Scenic Highway System includes a list of highways that are either eligible for designation as scenic highways or have been officially designated. No officially designated State scenic highways are located in the City. The nearest State scenic highway to the City is SR-198 east of SR-99.<sup>2</sup> Although the project site is located adjacent to SR-198, the portion that is designated as a State scenic highway is located approximately 3.2 miles east of the project site. The project site would not

<sup>2</sup> California Department of Transportation (Caltrans). 2017. *California Scenic Highways*. February. Website: [www.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=f0259b1ad0fe4093a5604c9b838a486a](http://www.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=f0259b1ad0fe4093a5604c9b838a486a) (accessed March 2023).

be visible from this scenic roadway. Therefore, implementation of the proposed project would not affect scenic resources within view of a State or local scenic highway, and there would be no impact, and no mitigation is required.

- c. In non-urbanized areas, would the project substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?*

The proposed project would develop a medical and mixed-use development and would construct 15 buildings consisting of medical outpatient clinic services, hotel and conference center, specialized education, retail, medical office, skilled nursing and assisted living, and multi-family residential uses, as well as a bio infiltration basin, associated open space, circulation and parking, and infrastructure improvements.

The Land Use and Community Design Element of the City's General Plan<sup>3</sup> states that through community design, the City can build and sustain an urban fabric that strengthens its assets and strives to bring coherence and an ongoing identity to this growing community. High-quality design contributes to memorable, vibrant places where people enjoy spending time. Engaging buildings and public spaces include pedestrian-friendly walkways and entries, open spaces, attractive streets, and efficient parking. In addition, the Land Use and Community Design Element states that the General Plan directs growth toward walkable and mixed-use areas that are planned to integrate housing with regional transit, employment, services, and amenities. The proposed project would develop a mixed-use, infill development consistent with the goals of the Land Use and Community Design Element.

The proposed project would require a rezone from C-H to C-S and R-H. Although the proposed project would require a General Plan Amendment and a Zone Change, the proposed uses would be consistent with the proposed General Plan designations and zones. Therefore, the proposed project would not substantially degrade the existing visual character or quality of the site and its surroundings and would not conflict with applicable zoning and other regulations governing scenic quality. This impact would be less than significant, and no mitigation is required.

- d. Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?*

Glare is the result of improperly aimed or blocked lighting sources that are visible against a dark background such as the night sky. Glare may also refer to the sensation experienced looking into an excessively bright light source that causes a reduction in the ability to see or causes discomfort. Glare generally does not result in illumination of off-site locations but results in a visible source of light viewable from a distance.

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<sup>3</sup> Hanford, City of. 2017. *General Plan – City of Hanford, California*. April. Website: [cms6.revize.com/revize/hanfordca/document\\_center/Planning/General%20Plan/2035%20General%20Plan%20Policy%20Document.pdf](https://cms6.revize.com/revize/hanfordca/document_center/Planning/General%20Plan/2035%20General%20Plan%20Policy%20Document.pdf) (accessed March 2023).

Implementation of the proposed project would create new lighting sources on the project site associated with the new buildings, street and parking lot lighting, and security lighting. All project lighting is required to meet all applicable lighting standards in the City's Municipal Code. As required by Section 17.50.140 of the Municipal Code, all lights and light fixtures, except public streetlights, shall be located, aimed or shielded so as to minimize light trespassing across property boundaries or skyward and no lights shall flash, revolve, blink or otherwise resemble a traffic control signal or operate in such a fashion to create a hazard for passing traffic. Building mounted lighting fixtures shall be attached only to the walls of the building. The top of a light fixture attached to a building wall shall not be higher than the top of the building parapet or the top of the roof eave, whichever is lower and canopy ceiling light fixtures shall be recessed or the sides of the lens area shall be shielded in order to eliminate emission of horizontal light. In addition, mercury vapor lamps shall be a fully shielded fixture with all light directed on-site and freestanding light fixtures shall not exceed 18 feet in height.

Although the proposed project would increase the overall intensity of on-site land uses and associated lighting, the increase in lighting would not result in substantial increases in light intensity at off-site locations. In addition, light intensity diminishes rapidly as an observer moves away from the light source. As such, the intensity of project-related lighting would be concentrated on site with little potential to create perceptible changes in ambient lighting intensity at off-site, light-sensitive locations.

Daytime glare can result from natural sunlight reflecting from a shiny surface that would interfere with the performance of an off-site activity, such as the operation of a motor vehicle. Reflective surfaces can be associated with window glass, polished surfaces, and solar panels. The design of the proposed buildings, parking lot, and solar panels would be designed to be consistent with the City's standards to avoid the creation of intrusive glare within the immediate project area.

Nighttime lighting and glare sources from the proposed project could also include lighting from interior and exterior building lighting, security lighting, signage, parking lot lighting, and vehicle headlights. The nighttime glare produced by these sources would be similar to the existing nighttime glare produced by surrounding residential, commercial, and medical uses and would not result in enough glare to be considered substantial or affect nighttime views because lighting would be designed to be consistent with the development regulations outlined in the Municipal Code.

For these reasons, the proposed project would not create a new source of substantial light or glare that would adversely affect day or nighttime views in the surrounding urban area, and project impacts would be less than significant. No mitigation is required.

## 4.2 AGRICULTURE AND FORESTRY RESOURCES

|                                                                                                                                                                                                                                                                                            | Potentially<br>Significant<br>Impact | Less Than<br>Significant with<br>Mitigation<br>Incorporated | Less Than<br>Significant<br>Impact | No<br>Impact                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------------------------|------------------------------------|-------------------------------------|
| Would the project:                                                                                                                                                                                                                                                                         |                                      |                                                             |                                    |                                     |
| a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?                                             | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input type="checkbox"/>           | <input checked="" type="checkbox"/> |
| b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?                                                                                                                                                                                                       | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input type="checkbox"/>           | <input checked="" type="checkbox"/> |
| c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))? | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input type="checkbox"/>           | <input checked="" type="checkbox"/> |
| d. Result in the loss of forest land or conversion of forest land to non-forest use?                                                                                                                                                                                                       | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input type="checkbox"/>           | <input checked="" type="checkbox"/> |
| e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?                                                                               | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input type="checkbox"/>           | <input checked="" type="checkbox"/> |

*a. Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?*

The project site is classified as Grazing Land.<sup>4</sup> The project site is not zoned for agricultural uses and is not enrolled in a Williamson Act Contract. The State Department of Conservation classifies the project site as Non-Enrolled Land. The project site is not located on land that is designated as Prime Farmland or Farmland of State Importance. In addition, the project site is currently vacant and is not zoned for agricultural uses. Therefore, implementation of the proposed project would not result in the conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the California Important Farmland Map, to a non-agricultural use. There would be no impact, and no mitigation is required.

*b. Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?*

The General Plan designation for the project site is currently Highway Commercial; however, the project would amend the General Plan to Service Commercial and High-Density Residential. In addition, the current zoning designation for the project site is C-H; however, the project would require a rezone to C-S and R-H. The project site is classified as Grazing Land and the land is not enrolled in a Williamson Act contract. Therefore, the proposed project would have no impact on

<sup>4</sup> California Department of Conservation. 2016. *California Important Farmland Finder*. Website: [maps.conservation.ca.gov/DLRP/CIFF/](https://maps.conservation.ca.gov/DLRP/CIFF/) (accessed March 2023).



zoning designations for agricultural and farmland use or land currently under a Williamson Act contract, and no mitigation is required.

- c. Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?*

The project site is not zoned for, nor would it require the rezoning of, any existing parcels or land use designations, including forest land or timberland uses. In addition, there is no forest land or timberland subject to the Public Resources Code within the vicinity of the project site. Therefore, the proposed project would have no impact to forestland or timberland, and no mitigation is required.

- d. Would the project result in the loss of forest land or conversion of forestland to non-forest use?*

See Response 4.2.c. The proposed project would not convert forest land to non-forest use and would not result in the loss or conversion of forest land to a non-forest use, and no mitigation is required.

- e. Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?*

As stated previously, the project site is currently vacant, and therefore would not convert farmland to a non-agricultural use. In addition, the project site would not contribute to environmental changes that could result in conversion of farmland to non-agricultural use. Therefore, no impacts to farmland or forest land would occur, and no mitigation is required.

### 4.3 AIR QUALITY

|                                                                                                                                                                                                   | Potentially<br>Significant<br>Impact | Less Than<br>Significant with<br>Mitigation<br>Incorporated | Less Than<br>Significant<br>Impact  | No<br>Impact             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------------------------|-------------------------------------|--------------------------|
| Would the project:                                                                                                                                                                                |                                      |                                                             |                                     |                          |
| a. Conflict with or obstruct implementation of the applicable air quality plan?                                                                                                                   | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard? | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c. Expose sensitive receptors to substantial pollutant concentrations?                                                                                                                            | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?                                                                                 | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

The proposed project is located within the City of Hanford. Hanford is part of the San Joaquin Valley Air Basin (SJVAB), which is within the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD). The SJVAPCD is responsible for air quality regulation within the eight county San Joaquin Valley region.

Both the State of California (State) and the federal government have established health-based Ambient Air Quality Standards (AAQS) for six criteria air pollutants: carbon monoxide (CO), ozone (O<sub>3</sub>), nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), lead (Pb), and suspended particulate matter (PM<sub>2.5</sub> and PM<sub>10</sub>). The SJVAB is designated as non-attainment for O<sub>3</sub> and PM<sub>2.5</sub> for federal standards and non-attainment for O<sub>3</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> for State standards.

Air quality monitoring stations are located throughout the nation and maintained by the local air districts and State air quality regulating agencies. Data collected at permanent monitoring stations are used by the USEPA to identify regions as “attainment” or “nonattainment” depending on whether the regions meet the requirements stated in the applicable National Air Quality Standards (NAAQS). Nonattainment areas are imposed with additional restrictions as required by the USEPA. In addition, different classifications of attainment, such as marginal, moderate, serious, severe, and extreme, are used to classify each air basin in the State on a pollutant-by-pollutant basis. The classifications are used as a foundation to create air quality management strategies to improve air quality and comply with the NAAQS. The SJVAB attainment statuses for each of the criteria pollutants are listed in Table 4.A.

**Table 4.A: SJVAB Air Quality Attainment Status**

| Pollutant         | Federal                       | State                   |
|-------------------|-------------------------------|-------------------------|
| Ozone (1-hour)    | No Federal Standard           | Nonattainment/Severe    |
| Ozone (8-hour)    | Nonattainment/Extreme         | Nonattainment           |
| PM <sub>10</sub>  | Attainment                    | Nonattainment           |
| PM <sub>2.5</sub> | Nonattainment                 | Nonattainment           |
| Carbon Monoxide   | Attainment/Unclassified       | Attainment/Unclassified |
| Nitrogen Dioxide  | Attainment/Unclassified       | Attainment              |
| Lead              | No Designation/Classification | Attainment              |
| Sulfur Dioxide    | Attainment/Unclassified       | Attainment              |
| Sulfates          | No Federal Standard           | Attainment              |
| Hydrogen Sulfide  | No Federal Standard           | Unclassified            |

Source: San Joaquin Valley Air Pollution Control District (2016).

*a. Would the project conflict with or obstruct implementation of the applicable air quality plan?*

An air quality plan describes air pollution control strategies to be implemented by a city, county, or region classified as a non-attainment area. The main purpose of the air quality plan is to bring the area into compliance with the requirements of the federal and State air quality standards. The SJVAPCD *Guidance for Assessing and Mitigating Air Quality Impacts* (GAMAQI)<sup>5</sup> indicates that projects that do not exceed regional criteria pollutant emission thresholds would not conflict or obstruct the implementation plan.

This analysis used two tests to determine if the project conflicts or obstructs the applicable air quality plans. First, if the project would result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations or delay timely attainment of air quality standards or the interim emission reductions specified in the air quality plans. Second, if the project would comply with applicable control measures in the air quality plans.

**Contribution to Air Quality Violations.** A measure for determining if the project is consistent with the air quality plans is if the project would not result in an increase in the frequency or severity of existing air quality violations, cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the air quality plans. Regional air quality impacts and attainment of standards are the result of the cumulative impacts of all emission sources within the air basin. Individual projects are generally not large enough to contribute measurably to an existing violation of air quality standards. Therefore, the cumulative impact of the project is based on its cumulative contribution. Because of the region's nonattainment status for O<sub>3</sub>, PM<sub>2.5</sub>, and PM<sub>10</sub>—if project-generated emissions of either of the O<sub>3</sub> precursor pollutants (nitrogen oxides [NO<sub>x</sub>], reactive organic gases [ROG]), PM<sub>10</sub>, or PM<sub>2.5</sub> would exceed SJVAPCD significance thresholds—then the project would be considered to contribute to violations of the applicable standards and conflict with the attainment plans.

<sup>5</sup> San Joaquin Valley Air Pollution Control District. 2015. CEQA, Guidance/Policies/Rules, Guidance for Assessing and Mitigating Air Quality Impacts. March 19. Website: [www.valleyair.org/transportation/ceqa\\_idx.htm](http://www.valleyair.org/transportation/ceqa_idx.htm) (accessed March 2023).

As discussed in Response 4.3.b below, emissions of ROG, NO<sub>x</sub>, CO, PM<sub>10</sub>, and PM<sub>2.5</sub> associated with construction and operation of the proposed project would not exceed SJVAPCD significance thresholds. In addition, the proposed project would not result in CO hotspots that would violate CO standards. Therefore, the proposed project would not contribute to air quality violations.

**Compliance with Applicable Control Measures.** A description of rules and regulations that apply to this project is provided below.

Rule 9510 (Indirect Source Review) is a control measure in the 2006 PM<sub>10</sub> Plan that requires NO<sub>x</sub> and PM<sub>10</sub> emission reductions from development projects in the SJVAB. The NO<sub>x</sub> emission reductions help reduce the secondary formation of PM<sub>10</sub> in the atmosphere (and also reduce the formation of ozone. Reductions in directly emitted PM<sub>10</sub> reduce particles such as dust, soot, and aerosols. Rule 9510 is also a control measure in the 2022 Plan for the 2015 8-Hour Ozone Standard. Developers of projects subject to Rule 9510 must reduce emissions occurring during construction and operational phases through on-site measures or pay off-site mitigation fees. The proposed project is required to comply with Rule 9510.

Regulation VIII (Fugitive PM<sub>10</sub> Prohibitions) is a control measure that is one main strategies from the 2006 PM<sub>10</sub> Plan for reducing the PM<sub>10</sub> emissions that are part of fugitive dust. Projects over 10 acres are required to file a Dust Control Plan (DCP) containing dust control practices sufficient to comply with Regulation VIII. The proposed project is required to prepare a DCP to comply with Regulation VIII.

Other control measures that apply to the proposed project are Rule 4641 (Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operation) that requires reductions in volatile organic compounds (VOC) during paving and Rule 4601 (Architectural Coatings) that limits the VOC content of all types of paints and coatings sold in the SJVAB. These regulations are enforced at the manufacturing level and at point of sale, not at the project level.

The proposed project would comply with all applicable SJVAPCD rules and regulations. Therefore, the proposed project would comply with this criterion and would not conflict with or obstruct implementation of the applicable air quality attainment plan.

**Conclusion.** The proposed project's emissions would be less than significant for all criteria pollutants and would not result in inconsistency with applicable air quality plans. The proposed project would comply with applicable air quality plan control measures and would not conflict with or obstruct their implementation; therefore, the proposed project is consistent with the applicable air quality plans, and the impact would be less than significant.

*b. Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?*

The SJVAB is designated as non-attainment for O<sub>3</sub> and PM<sub>2.5</sub> for federal standards and non-attainment for O<sub>3</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> for State standards. SJVAPCD nonattainment status is attributed to the region's development history. Past, present, and future development projects contribute to

the region's adverse air quality impacts on a cumulative basis. By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's contribution to the cumulative impact is considerable, then the project's impact on air quality would be considered significant.

In developing thresholds of significance for air pollutants, the SJVAPCD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions.

To result in a less than significant impact, the following criteria must be true: 1) regional analysis: emissions of nonattainment pollutants must be below SJVAPCD regional significance thresholds; 2) summary of projections: the project must be consistent with current air quality attainment plans including control measures and regulations; and 3) cumulative health impacts: the project must result in less than significant cumulative health effects from the nonattainment pollutants. The following analysis assesses the potential project-level construction- and operation-related air quality impacts.

**Short-Term Construction Emissions.** During construction, short-term degradation of air quality may occur due to the release of particulate matter emissions (i.e., fugitive dust) generated by grading, hauling, and other activities. Emissions from construction equipment are also anticipated and would include CO, NO<sub>x</sub>, ROG, directly-emitted particulate matter (PM<sub>2.5</sub> and PM<sub>10</sub>), and toxic air contaminants (TACs) such as diesel exhaust particulate matter.

Site preparation and project construction would involve grading, paving, and other activities. Construction-related effects on air quality from the proposed project would be greatest during the site preparation phase due to the disturbance of soils. If not properly controlled, these activities would temporarily generate particulate emissions. Sources of fugitive dust would include disturbed soils at the construction site. Unless properly controlled, vehicles leaving the site would deposit dirt and mud on local streets, which could be an additional source of airborne dust after it dries. PM<sub>10</sub> emissions would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. PM<sub>10</sub> emissions would depend on soil moisture, silt content of soil, wind speed, and the amount of operating equipment. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site.

Water or other soil stabilizers can be used to control dust, resulting in emission reductions of 50 percent or more. SJVAPCD Regulation VIII is designed to reduce PM<sub>10</sub> emissions generated by human activity. The SJVAPCD has established Regulation VIII measures for reducing fugitive dust emissions (PM<sub>10</sub>). With the implementation of Regulation VIII measures, fugitive dust emissions from construction activities would not result in adverse air quality impacts.

In addition to dust-related PM<sub>10</sub> emissions, heavy trucks and construction equipment powered by gasoline and diesel engines would generate CO, SO<sub>2</sub>, NO<sub>x</sub>, ROGs and some soot particulate (PM<sub>2.5</sub>

and PM<sub>10</sub>) in exhaust emissions. If construction activities were to increase traffic congestion in the area, CO and other emissions from traffic would increase slightly while those vehicles are delayed. These emissions would be temporary and limited to the immediate area surrounding the construction site.

Construction emissions were estimated for the project using the California Emissions Estimator Model, version 2022.1 (CalEEMod) as recommended by the SJVAPCD. The project was assumed to begin construction March 2024 and last approximately 3 years. The proposed project would require between 50,000 to 90,000 cubic yards of soil moved throughout the site and may require re-compaction in place and over excavation. Over excavation would be between 30,000 and 60,000 cubic yards of soil; as such, this analysis assumes that 60,000 cubic yards of soil would be off-hauled. This analysis also assumes the use of Tier 2 construction equipment. Other construction details are not yet known; therefore, default assumptions (e.g., construction fleet activities and worker and vendor trips) from CalEEMod were used.

Construction-related emissions for each year of construction are presented in Table 4.B. CalEEMod output sheets are included in Appendix A.

**Table 4.B: Project Construction Emissions**

| Year                                         | Emissions (tons per year) |                 |            |                  |                   |
|----------------------------------------------|---------------------------|-----------------|------------|------------------|-------------------|
|                                              | ROG                       | NO <sub>x</sub> | CO         | PM <sub>10</sub> | PM <sub>2.5</sub> |
| Construction 2024                            | 0.2                       | 3.7             | 3.3        | 0.5              | 0.2               |
| Construction 2025                            | 0.2                       | 2.8             | 3.3        | 0.4              | 0.2               |
| Construction 2026                            | 0.3                       | 2.5             | 2.8        | 0.3              | 0.1               |
| Construction 2027                            | 1.2                       | <0.1            | 0.1        | <0.1             | <0.1              |
| <b>Total Construction Emissions</b>          | <b>1.9</b>                | <b>9.0</b>      | <b>9.4</b> | <b>1.2</b>       | <b>0.5</b>        |
| <b>Highest Annual Construction Emissions</b> | <b>1.2</b>                | <b>3.7</b>      | <b>3.3</b> | <b>0.5</b>       | <b>0.2</b>        |
| Significance Thresholds                      | 10.00                     | 10.00           | 100.00     | 15.00            | 15.00             |
| <b>Exceed Threshold?</b>                     | <b>No</b>                 | <b>No</b>       | <b>No</b>  | <b>No</b>        | <b>No</b>         |

Source: LSA (March 2023).

As shown in Table 4.B construction emissions associated with the project would not exceed SJVAPCD thresholds for ROG, NO<sub>x</sub>, CO, PM<sub>10</sub>, and PM<sub>2.5</sub> emissions. Therefore, construction of the proposed project would not result in a cumulatively considerable net increase of PM<sub>10</sub> or any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standards and impacts would be less than significant.

**Long-Term (Operational) Emissions.** Long-term air pollutant emission impacts are those associated with mobile sources (e.g., vehicle trips), energy sources (e.g., electricity and natural gas), and area sources (e.g., architectural coatings and the use of landscape maintenance equipment) related to the proposed project.

PM<sub>10</sub> emissions result from running exhaust, tire and brake wear, and the entrainment of dust into the atmosphere from vehicles traveling on paved roadways. Entrainment of PM<sub>10</sub> occurs when

vehicle tires pulverize small rocks and pavement, and the vehicle wakes generate airborne dust. The contribution of tire and brake wear is small compared to the other PM emission processes. Gasoline-powered engines have small rates of particulate matter emissions compared with diesel-powered vehicles.

Energy source emissions result from activities in buildings for which electricity and natural gas are used. The quantity of emissions is the product of usage intensity (i.e., the amount of electricity or natural gas) and the emission factor of the fuel source. Major sources of energy demand include building mechanical systems, such as heating and air conditioning, lighting, and plug-in electronics, such as refrigerators or computers. Greater building or appliance efficiency reduces the amount of energy for a given activity and thus lowers the resultant emissions. The emission factor is determined by the fuel source, with cleaner energy sources, like renewable energy, producing fewer emissions than conventional sources.

Typically, area source emissions consist of direct sources of air emissions located at the project site, including architectural coatings and the use of landscape maintenance equipment. Area source emissions associated with the project would include emissions from the use of landscaping equipment and the use of consumer products.

Emission estimates for operation of the project were calculated using CalEEMod. Model results are shown in Table 4.C. Trip generation rates for the project were based on the project's trip generation estimates, as identified in Section 4.17, Transportation. However, as discussed in Section 4.17, Transportation, approximately 41,500 square feet of commercial/office uses is proposed. These uses would generate fewer trips than the 114,000 square feet of commercial/office uses that is analyzed in the proposed project trip generation estimate. The trip generation in CalEEMod was adjusted to reflect 41,500 square feet of commercial/office uses. As such, CalEEMod assumes a total of approximately 5,239 average daily trips (ADT), including 1,393 ADT for the Ambulatory Surgery Center, Specialty Clinic, Medical Office Building, and Psychiatric Health Facility, 682 ADT for the Hotel and Conference Center, 638 ADT for the Nursing College, 662 ADT for the Skilled Nursing Facility, Memory Care, Assisted Living Facility, 576 ADT for the Multi-Family Apartments, and 1,287 ADT for the Medical/Commercial uses based on the project's trip generation and taking into account a 10 percent reduction for internal trips. In addition, this analysis assumes the proposed project would be built to current Title 24 building standards. Where project-specific data were not available, default assumptions from CalEEMod were used to estimate project emissions.

The primary emissions associated with the project are regional in nature, meaning that air pollutants are rapidly dispersed on release or, in the case of vehicle emissions associated with the project; emissions are released in other areas of the Air Basin. The annual emissions associated with project operation are identified in Table 4.C for ROG, NO<sub>x</sub>, CO, PM<sub>10</sub>, and PM<sub>2.5</sub>.



**Table 4.C: Project Operation Emissions**

| Source                           | Emissions (tons per year) |                 |             |                  |                   |
|----------------------------------|---------------------------|-----------------|-------------|------------------|-------------------|
|                                  | ROG                       | NO <sub>x</sub> | CO          | PM <sub>10</sub> | PM <sub>2.5</sub> |
| Mobile Source Emissions          | 2.9                       | 2.5             | 14.5        | 1.1              | 0.2               |
| Area Source Emissions            | 2.4                       | 0.1             | 4.3         | 0.3              | 0.3               |
| Energy Source Emissions          | <0.1                      | 0.6             | 0.4         | <0.1             | <0.1              |
| <b>Total Operation Emissions</b> | <b>5.4</b>                | <b>3.2</b>      | <b>19.2</b> | <b>1.5</b>       | <b>0.6</b>        |
| Significance Thresholds          | 10.00                     | 10.00           | 100.00      | 15.00            | 15.00             |
| <b>Exceed Threshold?</b>         | <b>No</b>                 | <b>No</b>       | <b>No</b>   | <b>No</b>        | <b>No</b>         |

Source: LSA (March 2023).

The results shown in Table 4.C indicate the project would not exceed the significance criteria for annual ROG, NO<sub>x</sub>, CO, PM<sub>10</sub> or PM<sub>2.5</sub> emissions. In addition, the application of SJVAPCD Rule 9510, and implementation of the General Plan air quality-related policies would reduce impacts to the extent feasible. The project fulfills other General Plan objectives by increasing development densities and providing infill development in an area surrounded by existing development. As such, operation of the proposed project would not result in a cumulatively considerable net increase of PM<sub>10</sub> or any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standards and impacts would be less than significant.

**Project Health Impacts.** In the 5th District Court of Appeal case *Sierra Club v. County of Fresno (Friant Ranch, L.P.)*, the Court found the project's Environmental Impact Report (EIR) deficient because it did not identify specific health-related effects resulting from the estimated amount of pollutants generated by the project. The ruling stated that the EIR should give a "sense of the nature and magnitude of the 'health and safety problems' caused by a project's air pollution. The EIR should translate the emission numbers into adverse impacts or to understand why such translation is not possible at this time (and what limited translation is, in fact, possible)."

The pollutants of concern in the Friant Ranch ruling were regional criteria pollutants ozone and PM<sub>10</sub>. It is important to note that the potential for localized impacts can be addressed through dispersion modeling. The SJVAPCD includes screening criteria that if exceeded would require dispersion modeling to determine if project emissions would result in a significant health impact. For this project, no significant localized health impacts would occur. Regional pollutants require more complex modeling as described below.

Ozone concentrations are estimated using regional photochemical models because ozone formation is subject to temperature, inversion strength, sunlight, emissions transport over long distances, dispersion, and the regional nature of the precursor emissions. The emissions from individual projects are too small to produce a measurable change in ozone concentrations – it is the cumulative contribution of emissions from existing and new development that is accounted for in the photochemical model. Ozone concentrations vary widely throughout the day and year even with the same amount of daily emissions. The SJVAPCD indicated in an Amicus Brief on Friant Ranch that running the photochemical model with just Friant Ranch emissions (109.5 tons/year NO<sub>x</sub>) is not likely to yield valid information given the relative scale involved. The NO<sub>x</sub> inventory for the San Joaquin Valley is 224 tons per day in 2019 or 81,760 tons per year. Friant Ranch would result in 0.13

percent increase in NO<sub>x</sub> emissions. A project emitting at the SJVAPCD CEQA threshold of 10 tons per year would result in a 0.01 percent increase in NO<sub>x</sub> emissions. Most project emissions are generated by motor vehicle travel distributed on regional roadways miles from the project site, and these emissions are not conducive to project-level modeling.

Emissions throughout the San Joaquin Valley are projected to decline in the coming decade. The SJVAPCD 2022 Ozone Plan predicts NO<sub>x</sub> emissions will decline 72 percent between 2018 and 2037, contributing to the Valley's progress toward attainment of the 2015 8-hour ozone standard levels through implementation of control measures included in the plan. This means that ozone health impacts to residents of the San Joaquin Valley will be lower than currently experienced, and most areas of the San Joaquin Valley will have attained ozone air quality standards. The plan accounts for growth in population at rates projected by the State for the San Joaquin Valley, so only cumulative projects that would exceed regional growth projections would potentially delay attainment and prolong the time and the number of people would experience health impacts. It is unlikely that anyone would experience greater impacts from regional emissions than currently occur. The federal transportation conformity regulation provides a means of ensuring growth in emissions does not exceed emission budgets for each County. Regional Transportation Plans and Regional Transportation Improvement Plans must provide a conformity analysis based on the latest planning assumptions that demonstrates that budgets will not be exceeded. If budgets are exceeded, the San Joaquin Valley may be subject to Clean Air Act sanctions until the deficiency is addressed.

Particulate emission impacts can be localized and regional. Particulates can be directly emitted and can be formed in the atmosphere with chemical reactions. Small directly emitted particles such as diesel emissions and other combustion emissions can remain in the atmosphere for a long time and can be transported over long distances. Large particles such as fugitive dust tend to be deposited a short distance from where emitted but can also travel long distances during periods of high winds. Particulates can be washed out of the atmosphere by rain and deposited on surfaces. Secondary particulates formed in the atmosphere such as ammonium nitrate require NO<sub>x</sub> and ammonia and require low inversion levels, and certain ranges of temperature and humidity to result in substantial concentrations. These complications, make modeling project particulate emissions to determine concentration only feasible for directly emitted particles at receptor locations close to the project site. Regional particulate concentrations are modeled using a gridded inventory (emissions in tons/day are placed a four-kilometer three-dimensional grid to spatially allocate the emissions geographically) and an atmospheric chemistry component to simulate the chemical reactions. The model uses relative reduction factors to determine the amount of reductions of each PM component will be needed to attain the air quality standards on the days with the conditions most favorable to high particulate concentrations. A small project would not produce sufficient emissions to determine a project's individual contribution to the particulate concentration and health impact.

Since the Basin is nonattainment for ozone, PM<sub>10</sub>, and PM<sub>2.5</sub>, it is considered to have an existing significant cumulative health impact without the project. When this occurs, the analysis considers whether the project's contribution to the existing violation of air quality standards is cumulatively considerable. The SJVAPCD regional thresholds for NO<sub>x</sub>, VOC, PM<sub>10</sub>, or PM<sub>2.5</sub> are applied as cumulative contribution thresholds. Projects that exceed the regional thresholds would have a cumulatively considerable health impact. As shown in Table 4.B and Table 4.B, the construction and

operational emissions analysis indicates that the project would not exceed SJVAPCD significance thresholds.

In addition, the SJVAPCD Air Quality Attainment Plans predict that nonattainment pollutant emissions will continue to decline each year as regulations adopted to reduce these emissions are implemented, accounting for growth projected for the region. Therefore, the cumulative health impact will also decline even with the project's emission contribution. As such, impacts would be considered less than significant.

*c. Would the project expose sensitive receptors to substantial pollutant concentrations?*

Sensitive receptors are defined as people that have an increased sensitivity to air pollution or environmental contaminants, including children, the elderly, and persons with pre-existing respiratory or cardiovascular illness. The SJVAPCD considers a sensitive receptor a location that houses or attracts children, the elderly, people with illnesses, or others who are especially sensitive to the effects of air pollutants. Examples of sensitive receptors include hospitals, residences, convalescent facilities, and schools. The proposed project includes residences, assisted living, and a skilled nursing facility that would house sensitive receptors.

**Off-Site Sensitive Receptors.** Construction activities associated with the proposed project may expose surrounding sensitive receptors to airborne particulates, as well as a small quantity of construction equipment pollutants (i.e., usually diesel-fueled vehicles and equipment). However, construction contractors would be required to implement measures to reduce or eliminate emissions by following the Regulation VIII, Fugitive PM<sub>10</sub> Prohibitions. Project construction emissions would be below SJVAPCD significance thresholds. In addition, once the proposed project is constructed, the project would not be a significant source of long-term operational emissions. Therefore, the proposed project would not expose sensitive receptors to substantial pollutant concentrations, and potential impacts to off-site sensitive receptors would be considered less than significant.

**On-Site Sensitive Receptors.** The proposed project would not be a significant source of TAC emissions. Construction activities produce short term emissions that would not contribute substantially to cancer risk, which is estimated based on a 70-year exposure period. In the California Building Industry Association v. Bay Area Air Quality Management District (BAAQMD), 62 Cal.4th 369 (2015) (Case No. S213478) the California Supreme Court held that "agencies subject to CEQA generally are not required to analyze the impact of existing environmental conditions on a project's future users or residents." Although the Court ruled that impacts from the existing environment on projects are not required to be addressed under CEQA, land uses such as gasoline stations, dry cleaners, distribution centers, and auto body shops can expose residents or other sensitive receptors to high levels of TAC emissions if they are in proximity of the project site. Information regarding the location of existing TAC sources is provided for disclosure purposes only and not as a measure of the project's significance under CEQA. Consistency with these recommendations is assessed as follows:

- Heavily traveled roads. The California Air Resource Board (CARB) recommends avoiding new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles per day, or

rural roads with 50,000 vehicles per day. Epidemiological studies indicate that the distance from the roadway and truck traffic densities were key factors in the correlation of health effects, particularly in children. The project is located north of SR-198. The traffic volume on SR-198 was 35,500 trips per day in 2017. Therefore, no roads serving the project would exceed this criterion.

- Distribution centers. CARB also recommends avoiding siting new sensitive land uses within 1,000 feet of a distribution center. The project is not located within 1,000 feet of a distribution center.
- Fueling stations. CARB recommends avoiding new sensitive land uses within 300 feet of a large fueling station (a facility with a throughput of 3.6 million gallons per year or greater). CARB recommends a 50-foot separation from typical gas dispensing facilities. The nearest gas station is approximately 0.18 mile southeast of the project site at the corner of 11th Avenue and West 3rd Street.
- Dry cleaning operations. CARB recommends avoiding siting new sensitive land uses within 300 feet of any dry-cleaning operation that uses perchloroethylene. For operations with two or more machines, CARB recommends a buffer of 500 feet. For operations with three or more machines, CARB recommends consultation with the local air district. The nearest dry-cleaning operation is approximately 0.76 mile east of the project site at 119 N. Douty Street.
- Auto body shops. Auto body shops have the potential to emit TACs related to painting. The nearest auto body shop is approximately 0.47 mile east of the project site at 329 W. 5th Street, which is beyond the distance that would result in a measurable impact.

As such, impacts to future on-site sensitive receptors would be less than significant.

**Localized Pollutant Analysis.** Emissions occurring at or near the project have the potential to create a localized impact, also referred to as an air pollutant hotspot. Localized emissions are considered significant if, when combined with background emissions, they would result in exceedance of any health-based air quality standard. The impact from localized pollutants is based on the impact to the nearest sensitive receptor.

The SJVAPCD's GAMAQI includes screening thresholds for identifying projects that need detailed analysis for localized impacts. Projects with on-site emission increases from construction activities or operational activities that exceed the 100 pounds per day screening level of any criteria pollutant after compliance with Rule 9510 and implementation of all enforceable mitigation measures would require preparation of an ambient air quality analysis. The criteria pollutants of concern for localized impact in the SJVAB are PM<sub>10</sub>, PM<sub>2.5</sub>, NO<sub>x</sub>, and CO. There is no localized emission standard for ROG and most types of ROG are not toxic and have no health-based standard; however, ROG was included for informational purposes only.

The results of the construction screening analysis are presented in Table 4.D.

**Table 4.D: Maximum Daily Air Pollutant Emissions during Construction**

| Year                                          | Emissions (pounds per day) |                 |             |                  |                   |
|-----------------------------------------------|----------------------------|-----------------|-------------|------------------|-------------------|
|                                               | ROG                        | NO <sub>x</sub> | CO          | PM <sub>10</sub> | PM <sub>2.5</sub> |
| <b>Highest Emissions in Any Year</b>          | <b>53.6</b>                | <b>59.4</b>     | <b>38.8</b> | <b>8.9</b>       | <b>4.0</b>        |
| Screening Thresholds                          | 100.00                     | 100.00          | 100.00      | 100.00           | 100.00            |
| <b>Exceed Threshold – Significant Impact?</b> | <b>No</b>                  | <b>No</b>       | <b>No</b>   | <b>No</b>        | <b>No</b>         |

Source: LSA (March 2023).

In addition, an analysis of maximum daily emissions during operation was conducted to determine if emissions would exceed 100 pounds per day for any pollutant of concern. Operational emissions include emissions generated on-site by area sources such as natural gas combustion and landscape maintenance, and off-site by motor vehicles accessing the project. By design, the localized impacts analysis only includes on-site sources; however, the CalEEMod outputs do not separate on-site and off-site emissions for mobile sources. Most motor vehicle emissions would occur distant from the site and would not contribute to a violation of ambient air quality standards; therefore, operational emissions only reflect the emissions within one half mile of the project site. As such, considering the total trip length included in CalEEMod, this analysis conservatively assumes that 5 percent of the project-related mobile source would occur on site. The results of the screening analysis are presented in Table 4.E.

**Table 4.E: Maximum Daily Air Pollutant Emissions during Operations**

| Source                   | Emissions (pounds per day) |                 |             |                  |                   |
|--------------------------|----------------------------|-----------------|-------------|------------------|-------------------|
|                          | ROG                        | NO <sub>x</sub> | CO          | PM <sub>10</sub> | PM <sub>2.5</sub> |
| <b>Total</b>             | <b>20.0</b>                | <b>3.5</b>      | <b>80.6</b> | <b>7.9</b>       | <b>7.3</b>        |
| Screening Threshold      | 100.00                     | 100.00          | 100.00      | 100.00           | 100.00            |
| <b>Exceed Threshold?</b> | <b>No</b>                  | <b>No</b>       | <b>No</b>   | <b>No</b>        | <b>No</b>         |

Source: LSA (March 2023).

As shown in Tables 4.D and 4.E, construction and operation of the proposed project would not exceed SJVAPCD screening thresholds for localized pollutant impacts; therefore, the project's localized criteria impacts would be less than significant.

**Carbon Monoxide Hot Spot Analysis.** Localized high levels of CO are associated with traffic congestion and idling or slow-moving vehicles. The SJVAPCD provides screening criteria to determine when to quantify local CO concentrations based on impacts to the level of service (LOS) of intersections in the project vicinity.

The construction of the project would result in minor increases in traffic for the surrounding road network during the duration of construction. Once operational, motor vehicles accessing the site would result in approximately 742 peak hourly trips and 7,493 average daily trips and would not substantially reduce the LOS with expected roadway improvements. As discussed in Section 4.17, Transportation, the 12th Avenue at Glendale Avenue intersection currently exceeds the City of Hanford's minimum LOS criteria during the PM peak hour. In addition, results of the analysis show

that the proposed project contributes to an unacceptable LOS at five of the study intersections when comparing the Cumulative Year 2042 scenarios. Section 4.17, Transportation, identifies potential intersection improvements; however, the intersection of 12th Avenue at Glendale Avenue would be above the City's standard of LOS D standard. The City acknowledges in General Plan Objective CI 2 and Policy CI 2.2, that there may be instances where design considerations or other public health, safety, or welfare factors determine otherwise. Therefore, since additional improvements are not recommended due design considerations, impacts to intersection LOS are considered to be less than significant. Therefore, the project would not significantly contribute to an exceedance of state or federal CO standards.

**Valley Fever.** Valley fever, or coccidioidomycosis, is an infection caused by inhalation of the spores of the fungus, *Coccidioides immitis* (*C. immitis*). The spores live in soil and can live for an extended time in harsh environmental conditions. Activities or conditions that increase the amount of fugitive dust contribute to greater exposure, and they include dust storms, grading, and recreational off-road activities.

The San Joaquin Valley is considered an endemic area for Valley fever. However, within endemic areas less favorable for the occurrence of *C. immitis* include: cultivated fields; heavily vegetated areas (e.g. grassy lawns); higher elevations (above 7,000 feet); areas where commercial fertilizers (e.g. ammonium sulfate) have been applied; areas that are continually wet; paved (asphalt or concrete) or oiled areas; soils containing abundant microorganisms; and heavily urbanized areas where there is little undisturbed virgin soil.<sup>6</sup>

The project site is situated in an infill area. The project includes urbanization of a site that was formerly graded. Therefore, implementation of the project would have a low probability of the site having *C. immitis* growth sites and exposure to the spores from disturbed soil.

Construction activities would generate fugitive dust that could contain *C. immitis* spores. The proposed project would minimize the generation of fugitive dust during construction activities by complying with SJVAPCD Regulation VIII. Therefore, this regulation, combined with the relatively low probability of the presence of *C. immitis* spores, would reduce Valley fever impacts to less than significant. During operations, dust emissions are anticipated to be negligible, because most of the project area would be occupied by buildings, pavement, and landscaped areas. This condition would preclude the possibility of the project from providing habitat suitable for *C. immitis* spores and for generating fugitive dust that may contribute to Valley fever exposure. Impacts would be less than significant.

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<sup>6</sup> U. S. Geological Survey. 2000. Operational Guidelines (version 1.0) for Geological Fieldwork in Areas Endemic for Coccidioidomycosis (Valley Fever). Website: [pubs.er.usgs.gov/publication/ofr00348](https://pubs.er.usgs.gov/publication/ofr00348) (accessed March 2023).

**Naturally Occurring Asbestos.** According to a map of areas where naturally occurring asbestos in California are likely to occur,<sup>7</sup> there are no such areas in the project area. Therefore, development of the project is not anticipated to expose receptors to naturally occurring asbestos. Impacts would be less than significant.

*d. Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?*

Land uses that are typically identified as sources of objectionable odors include landfills, transfer stations, sewage treatment plants, wastewater pump stations, composting facilities, feed lots, coffee roasters, asphalt batch plants, and rendering plants. The project would not engage in any of these activities. Therefore, the project would not be considered a generator of objectionable odors during operations.

During construction, the various diesel-powered vehicles and equipment in use on-site would create localized odors. These odors would be temporary and would not likely be noticeable for extended periods of time beyond the project's site boundaries. The potential for diesel odor impacts would therefore be less than significant.

As a residential and medical office development, the project has the potential to place sensitive receptors near existing odor sources. The City's wastewater treatment plant is located approximately 1.75 miles south southeast of the project site. The prevailing wind direction in Hanford is northwesterly; therefore, the site location would not be exposed to substantial odors. There are no other major odor-generating sources near the project site. Therefore, the proposed project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people, and potential impacts would be considered less than significant.

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<sup>7</sup> U.S. Geological Survey. 2011. Van Gosen, B.S., and Clinkenbeard, J.P. California Geological Survey Map Sheet 59. Reported Historic Asbestos Mines, Historic Asbestos Prospects, and Other Natural Occurrences of Asbestos in California. Open-File Report 2011-1188. Website: <http://pubs.usgs.gov/of/2011/1188/> (accessed March 2023).



## 4.4 BIOLOGICAL RESOURCES

|                                                                                                                                                                                                                                                                                                                      | Potentially<br>Significant<br>Impact | Less Than<br>Significant with<br>Mitigation<br>Incorporated | Less Than<br>Significant<br>Impact  | No<br>Impact                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------------------------|-------------------------------------|-------------------------------------|
| Would the project:                                                                                                                                                                                                                                                                                                   |                                      |                                                             |                                     |                                     |
| a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service? | <input type="checkbox"/>             | <input checked="" type="checkbox"/>                         | <input type="checkbox"/>            | <input type="checkbox"/>            |
| b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?                                                               | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?                                                                                         | <input type="checkbox"/>             | <input checked="" type="checkbox"/>                         | <input type="checkbox"/>            | <input type="checkbox"/>            |
| d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?                                                                                   | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?                                                                                                                                                                                  | <input type="checkbox"/>             | <input checked="" type="checkbox"/>                         | <input type="checkbox"/>            | <input type="checkbox"/>            |
| f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?                                                                                                                                 | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

The following discussion is based on the findings of the Biological Resources Assessment<sup>8</sup> prepared for the proposed project. The Biological Resources Assessment is included as Appendix B.

**Methods.** LSA Biologist Kelly McDonald conducted a literature review and records search on March 31, 2020, to identify the existence and potential for occurrence of sensitive or special status<sup>9</sup> plant and animal species in the vicinity of the project site. Federal and State lists of sensitive species were also examined. Current electronic database records reviewed included the following:

<sup>8</sup> LSA. 2020. *Biological Resources Assessments Hanford Place Project Kings County, California*. May.

<sup>9</sup> For the purposed of this report, the term “special-status species” refers to those species that are listed or proposed for listing under the CESA and/or FESA, California Fully Protected Species, California Species of Special Concern, and California Special Animals. It should be noted that “Species of Special Concern” and “California Special Animal” are administrative designations made by the CDFW and carry no formal legal protection status. However, Section 15380 of the *State CEQA Guidelines* indicates that these species should be included in an analysis of project impacts if they can be shown to meet the criteria of sensitivity outlined therein.

- **California Natural Diversity Data Base information (CNDDB – RareFind 5)**, which is administered by the California Department of Fish and Wildlife (CDFW), formerly known as the California Department of Fish and Game (CDFG). This database covers sensitive plant and animal species as well as sensitive natural communities that occur in California. Records from nine USGS quadrangles surrounding the project site (*Riverdale, Laton, Burris Park, Lemoore, Hanford, Remnøy, Stratford, Guernsey, and Waukena*) were obtained from this database to inform the field survey.
- **California Native Plant Society’s (CNPS) Electronic Inventory of Rare and Endangered Vascular Plants**, which utilizes four specific categories or “lists” of sensitive plant species to assist with the conservation of rare or endangered botanical resources. All of the plants constituting California Rare Plant Ranks (CRPR) 1A, 1B, 2A, and 2B are intended to meet the status definitions of “threatened” or “endangered” in CESA and the California Department of Fish and Game Code, and are considered by CNPS to be eligible for State listing. At the discretion of the CEQA Lead Agency, impacts to these species may be analyzed as such, pursuant to the *State CEQA Guidelines* Sections 15125(c) and 15380. Plants in Rank 3 (limited information; review list), Rank 4 (limited distribution; watch list), or that are considered Locally Unusual and Significant may be analyzed under CEQA if there is sufficient information to assess potential significant impacts. Records from the nine USGS quadrangles surrounding the project site were obtained from this database to inform the field survey.
- **United States Fish and Wildlife Service’s (USFWS) Information for Planning and Conservation (IPaC) Online System**, which lists all proposed, candidate, threatened, and endangered species managed by the Endangered Species Program of the USFWS that have the potential to occur on or near a particular site. This database also lists all known critical habitats, national wildlife refuges, and migratory birds that could potentially be impacted by activities from a proposed project. An IPaC Trust Resource Report was generated for the project area.
- **Designated and Proposed USFWS Critical Habitat Polygons** were reviewed to determine whether critical habitat has been designated or proposed within or in the vicinity of the project site.
- **The USFWS National Wetlands Inventory** was reviewed to determine whether any wetlands or surface waters of the United States have been previously-identified in the survey area.
- **eBird**: eBird is a real-time, online checklist program launched in 2002 by the Cornell Lab of Ornithology and National Audubon Society. It provides rich data sources for basic information on bird abundance and distribution at a variety of spatial and temporal scales. eBird occurrence records for burrowing owl (*Athene cunicularia*) from a 5-mile radius around the project site were reviewed in May 2020.

In addition to the databases listed above, historic and current aerial imagery, existing environmental reports for developments in the project vicinity, and local land use policies related to biological resources were reviewed.

A general biological survey of the project site was conducted by LSA Biologist Kelly McDonald on April 27, 2020. The project site was surveyed on foot, and all biological resources observed were noted and mapped. Suitable habitat for any species of interest or concern was duly noted, and general site conditions were photographed. The field survey took place on a clear sunny morning with weather conditions conducive to the detection of plant and animal species.

- a. *Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?*

The Hanford region supports various special-status natural communities, plants, and animals. The Biological Resources Assessment provides tables that identify those special-status plant and animal species known to occur or that potentially occur in the vicinity of the project site (based on the literature review and experience in the region) and includes detailed information about each species' habitat and distribution, State and federal status designations, and probability of occurrence within the project site. As stated in the methodology section above, the background research included occurrence records from nine United States Geological Survey (USGS) topographic quadrangles surrounding the survey area. A nine USGS quadrangle search covers a large, variable geographic and topographic area containing numerous habitat types not found within or around the project site.

**Special-Status Natural Communities.** No special-status natural communities or conservation areas exist within the project site or in adjacent parcels. The project site is completely isolated and distant from all special-status natural communities that occur in the region. Therefore, as the project site does not contain any special-status natural communities, such habitats would not be impacted by the proposed project.

**Special-Status Species.** No special-status plant species are expected to occur within the project site or to be adversely affected by the proposed project.

While no special-status animal species (or signs of such species) were observed on site during the April 2020 survey, several small mammal burrows were observed within the project site that are considered suitable habitat for burrowing owl, a California Species of Special Concern, and/or San Joaquin kit fox, a federally listed as endangered and state-listed as threatened species. None of the small mammal burrows observed in the project site exhibited features typical of occupied kit fox or burrowing owl burrows at the time of the survey, although there is some potential for use by these species in the future. Potentially significant direct and indirect impacts, including mortality, harassment, or other forms of incidental take, could occur if construction-related ground disturbance occurs in or around an occupied den or burrow.

No other special-status species were determined to have a moderate or high probability of occurrence on the project site (refer to Appendix D of the Biological Resources Assessment). The removal of the disturbed annual grassland habitat documented on the project site is not anticipated to substantially impact the population sizes of any special-status animal species given the context and setting of the project site and additional habitats for such species in the project vicinity.

While suitable habitat for shrub and tree nesting birds is very limited on the project site (only one tree occurs within the site boundaries), the project site does contain suitable nesting habitat for a variety of ground-nesting birds and for other birds that could nest in the annual herbaceous vegetation. Nesting birds are protected under the California Fish and Game Code. Construction activities that occur during the nesting bird season (typically February 15 through September 15) have potential to result in the direct or indirect take of nesting birds.

If unmitigated or unavoided, these potential direct and indirect impacts on special-status wildlife species and nesting birds could be considered potentially significant. However, conducting pre-construction surveys and complying with applicable regulatory requirements would prevent or compensate for impacts on special-status species. Therefore, implementation of Mitigation Measures BIO-1 through BIO-4, as summarized below, which would require pre-construction surveys and compliance with applicable regulatory requirements, would effectively mitigate any impacts on special-status wildlife species to less-than-significant levels.

**Mitigation Measure BIO-1****Conduct Preconstruction Clearance Surveys for San Joaquin Kit Fox and Burrowing Owl.**

A preconstruction clearance survey is required for San Joaquin kit fox and burrowing owl no more than 30 calendar days prior to initiation of project activities. All survey results must be delivered to the United States Fish and Wildlife Service's (USFWS), the California Department of Fish and Wildlife (CDFW), and the City. If the survey results find an active burrow of one or both of these species on the project site, the applicant must coordinate with the applicable resource agencies (CDFW for burrowing owl, CDFW and USFWS for kit fox) to obtain applicable agency approval(s)/permit(s) prior to any ground disturbance activities on the site.

Specific avoidance, den excavation, passive relocation, and compensatory mitigation activities shall be performed as required by the applicable agency. Appropriate provisions of the *CDFW Staff Report on Burrowing Owl Mitigation* and *USFWS Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox* shall be adhered to.

**Mitigation Measure BIO-2**

**Worker Environmental Awareness Training.** Prior to initial groundbreaking, Worker Environmental Awareness Training shall be conducted by a qualified biologist to educate all construction personnel on the relevant federal, state, and local laws related to potentially occurring special-status species at the site. The tailgate session shall include training on identification of species that may be found on the project site, the status of those species, and any legal protection afforded to those species. Personnel will be advised to report any special-status species encountered promptly. A fact sheet conveying this information will be prepared for display or for distribution to anyone who may enter the project site.

### Mitigation Measure BIO-3

#### Construction Site Housekeeping and Operational Requirements.

Habitat subject to permanent and temporary construction disturbances and other types of ongoing project-related disturbance activities shall be minimized by adhering to the following *USFWS Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox*:

- a. To minimize temporary disturbances, all project-related vehicle traffic shall be restricted to established roads, construction areas, and other designated areas. These areas shall also be included in preconstruction surveys and, to the extent possible, shall be established in locations disturbed by previous activities to prevent further impacts.
- b. Project-related vehicles shall observe a daytime speed limit of 20-mph throughout the site in all project sites, except on county roads and state and federal highways; this is particularly important at night when kit foxes are most active. Night-time construction shall be minimized to the extent possible. However, if it does occur, then the speed limit shall be reduced to 10-mph. Off-road traffic outside of designated project sites shall be prohibited.
- c. To prevent inadvertent entrapment of kit foxes or other animals during the construction phase of a project, all excavated, steep-walled holes or trenches more than 2-feet deep shall be covered at the close of each working day by plywood or similar materials. If the trenches cannot be closed, one or more escape ramps constructed of earthen-fill or wooden planks shall be installed. Before such holes or trenches are filled, they shall be thoroughly inspected for trapped animals. If at any time a trapped or injured kit fox is discovered, the USFWS and the CDFW shall be contacted.
- d. Kit foxes are attracted to den-like structures such as pipes and may enter stored pipes and become trapped or injured. All construction pipes, culverts, or similar structures with a diameter of 4-inches or greater that are stored at a construction site for one or more overnight periods shall be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a kit fox is discovered inside a pipe, that section of pipe shall not be moved until the USFWS and CDFW have been consulted. If necessary, and under the direct supervision of a qualified biologist, the pipe may be moved only once to remove it from the path of construction activity, until the fox has escaped. In the case of

trapped animals, escape ramps or structures shall be installed immediately to allow the animal(s) to escape, or the USFWS and CDFW should be contacted for further guidance.

- e. All food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in securely closed containers and removed at least once a week from a construction or project site.
- f. Pets, such as dogs or cats, shall not be permitted on the project site to prevent harassment, mortality of kit foxes, or destruction of dens.
- g. Use of rodenticides and herbicides in project sites shall be restricted. This is necessary to prevent primary or secondary poisoning of kit foxes and the depletion of prey populations on which they depend. All uses of such compounds shall observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and other state and federal legislation. If rodent control must be conducted, zinc phosphide should be used because of a proven lower risk to kit fox.

#### Mitigation Measure BIO-4

**Nesting Bird Surveys and Avoidance.** If vegetation removal, construction, or grading activities are planned to occur within the active nesting bird season (February 15 through September 15), a qualified biologist shall conduct a preconstruction nesting bird survey no more than 5 days prior to the start of such activities. The nesting bird survey shall include the project site and areas immediately adjacent to the site that could potentially be affected by project-related activities such as noise, vibration, increased human activity, and dust, etc. For any active nest(s) identified, the qualified biologist shall establish an appropriate buffer zone around the active nest(s). The appropriate buffer shall be determined by the qualified biologist based on species, location, and the nature of the proposed activities. Project activities shall be avoided within the buffer zone until the nest is deemed no longer active by the qualified biologist.

**Critical Habitat.** The project would not result in any impacts to critical habitat, and no additional mitigation is required.

- b. Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?*

No riparian habitat or other sensitive natural communities are present at the project site. Therefore, implementation of the proposed project would not have a substantial adverse effect on any riparian habitat or other sensitive natural community. As a result, no impact would occur.

- c. Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?*

The project proposes to convert an open trapezoidal segment of Peoples Ditch (an excavated irrigation canal) to a 66-inch-diameter below-ground pipe culvert which would terminate approximately 20 feet short of the existing pipe culvert that runs under SR-198. Approximately 0.50 acre of the irrigation canal would be undergrounded as part of the project.

Peoples Ditch does not meet the definition of a jurisdictional water of the United States pursuant to the *Navigable Waters Protection Rule*, effective June 22, 2020. Furthermore, Peoples Ditch does not meet the wetland criteria outlined in the *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State*, which excludes agricultural ditches with ephemeral flow that are not a relocated water of the state or excavated in a water of the state. Nevertheless, Peoples Ditch may fall within the jurisdiction of CDFW under Section 1602 of the California Fish and Game Code and the Regional Water Quality Control Board (RWQCB) under the California Water Code (e.g., the Porter-Cologne Water Quality Control Act). Furthermore, given the recent substantial changes in operable definitions that have occurred and may continue to occur, and considering the regulatory revisions and potential court actions, it is not possible to definitively predict the regulations that will be in place at the time of a particular jurisdictional determination or permit action by the USACE. Under currently effective Clean Water Act regulations and guidance, the USACE reserves the right to regulate certain resources on a case-by-case basis. Therefore, Mitigation Measure BIO-5 would be required.

**Mitigation Measure BIO-5**

**Agency Coordination for Peoples Ditch.** Prior to any modifications to Peoples Ditch, it is recommended to consult with the United States Army Corps of Engineers (USACE), CDFW, and Regional Water Quality Control Board (RWQCB) to verify the feature's jurisdictional status and obtain applicable permit(s) and/or authorization(s). A notification of streambed alteration should be submitted to the CDFW in accordance with Section 1602 of the California Fish and Game Code. Unless categorically excluded under effective definitions or existing documentation confirms that no permit is needed, the Central Valley RWQCB and Sacramento District of the USACE should be consulted regarding potential permitting needs under the California Water Code and federal Clean Water Act, respectively, associated with the proposed Peoples Ditch modifications.



Implementing applicable permit measures would prevent or compensate for impacts on jurisdictional aquatic resources. Considering the status of Peoples Ditch as a constructed and maintained irrigation canal and the lack of natural drainages, riparian areas, and wetlands on the project site, the project would not result in a substantial adverse effect on State or federally protected wetlands through direct removal, filling, hydrological interruption, or by other means. The impact would be considered less than significant with mitigation incorporated.

*d. Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?*

The wildlife species that occur in the project vicinity are adapted to the urban-wildland interface, and the project would not introduce new affects to the area. The noise, vibration, light, dust, or human disturbance within construction areas would only temporarily deter wildlife from using areas in the immediate vicinity of construction activities. These indirect effects could temporarily alter migration behaviors, territories, or foraging habitats in select areas. However, because these are temporary effects, it is likely that wildlife already living and moving in close proximity to urban development would alter their normal functions for the duration of the project construction and then re-establish these functions once all temporary construction effects have been removed. The proposed project would not place any permanent barriers within any known wildlife movement corridors or interfere with habitat connectivity. The impact would be considered less than significant, and no additional mitigation is required.

*e. Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?*

The City of Hanford and Kings County currently do not have a regional Natural Community Conservation Plan or Habitat Conservation Plan. The 2035 General Plan for the City outlines local relevant policies related to biological resources. Below is the list of applicable policies and consistency analysis:

- **5.5.1 Natural Habitat: Goal 04:** Protection of natural habitat and other biological resources.

- *Policy 031 Provision of Open Space Areas: Preserve and enhance open space area.*

Consistency Analysis: The project site is currently designated as a Highway Commercial land use and is isolated from open space areas; therefore, the project is considered consistent with this policy.

- *Policy 032 Wetland and Riparian Corridor: Where appropriate and feasible, establish permanent mechanisms to protect wetlands and riparian corridors.*

Consistency Analysis: The project is not located within wetlands or riparian corridors; therefore, the project is considered consistent with this policy.

- *Policy 033 Vernal Pools:* Identify and protect vernal pools that be located in Planning Area.

Consistency Analysis: Vernal pools are not located within the project site; therefore, the project is considered consistent with this policy.

- *Policy 035 Impacts from Development:* Ensure that potential impacts to biological resources and sensitive habitat are carefully evaluated when considering development projects.

Consistency Analysis: No sensitive or special-status natural communities occur on the project site. An appropriately timed field survey and biological resources assessment were conducted on the project site to determine the likelihood and suitability of sensitive habitat and species; the project is not likely to result in significant impacts on sensitive resources with the implementation of recommended measures. Therefore, the project is considered consistent with this policy.

- *Policy 037 Mature Trees:* Promote the preservation of existing mature trees and encourage the planting of appropriate shade trees in new developments.

Consistency Analysis: The development plan includes the removal of one nonnative tree. The project will include the planting of trees as part of the landscaping plan, resulting in an overall increase in shade trees within the project area. Therefore, the project is considered consistent with this policy.

- *Policy 038 Native Tree Species and Drought Tolerant Vegetation:* Encourage the planting of native tree species and drought-tolerant vegetation.

Consistency Analysis: The landscaping plan will be provided in accordance with Section 17.52 Landscape Standards of the Hanford Municipal Code; all species of trees shall be selected from a list approved by the City's Parks Division. Therefore, the project is considered consistent with this policy.

- **5.5.2 Wildlife and Sensitive Species**

- *Policy 039 Endangered Wildlife and Habitat:* Establish programs in connection with environmental review processes to protect endangered wildlife and their habitats.

Consistency Analysis: An appropriately-timed field survey and literature reviews were conducted for the project in support of the CEQA review process. Based on the analysis and with implementation of the recommended mitigation measures contained herein, it is unlikely that any endangered species would be adversely affected by the project. Therefore, the project is considered consistent with this policy.

- *Policy 040 Sensitive Wildlife:* Work with State, federal, and local agencies on the preservation of sensitive wildlife species in the City.

Consistency Analysis: Implementation of recommended Mitigation Measures BIO-1 through BIO-4, as described above, would ensure consistency with applicable resource agency policies with regard to sensitive wildlife species determined to have potential of occurring on the project site. Therefore, the project is considered consistent with this policy.

With implementation of the Mitigation Measures BIO-1 through BIO-5 listed above, the proposed project would not conflict with any regional habitat conservation plan or local policies related to the protection and conservation of biological resources. Therefore, this impact is considered less than significant with mitigation incorporated.

*f. Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?*

The project site is not within the boundaries of a habitat conservation plan or natural community conservation plan. This condition precludes the possibility that implementation of the proposed project would conflict with the provisions of such a plan, and no impact would occur.

## 4.5 CULTURAL RESOURCES

|                                                                                                               | Potentially<br>Significant<br>Impact | Less Than<br>Significant with<br>Mitigation<br>Incorporated | Less Than<br>Significant<br>Impact | No<br>Impact             |
|---------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------------------------|------------------------------------|--------------------------|
| Would the project:                                                                                            |                                      |                                                             |                                    |                          |
| a. Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?      | <input type="checkbox"/>             | <input checked="" type="checkbox"/>                         | <input type="checkbox"/>           | <input type="checkbox"/> |
| b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5? | <input type="checkbox"/>             | <input checked="" type="checkbox"/>                         | <input type="checkbox"/>           | <input type="checkbox"/> |
| c. Disturb any human remains, including those interred outside of formal cemeteries?                          | <input type="checkbox"/>             | <input checked="" type="checkbox"/>                         | <input type="checkbox"/>           | <input type="checkbox"/> |

A Cultural Resource Inventory<sup>10</sup> was prepared for the proposed project, which included: (1) a records search at the California Historical Resources Information System (CHRIS) Southern San Joaquin Valley Information Center (SSJVIC) to identify prior cultural resource studies and previously recorded cultural resources in the project area and surrounding 0.5-mile area; (2) desktop archival research to better understand land use and property ownership within the project area; (3) a search of the Native American Heritage Commission's (NAHC) Sacred Lands File and outreach with local tribal representatives; (4) a pedestrian survey of the project area to identify potential historical resources within the project area and preliminary recordation of identified resources on the appropriate California Department of Parks and Recreation record form(s); (5) a buried site sensitivity assessment; and (6) recommendations for further work to assess whether the proposed project would cause adverse impacts to historical resources—i.e., cultural resources eligible for listing on the California Register. The analysis in this Cultural Resources section is based on the results of the Cultural Resource Inventory. The Cultural Resource Inventory is included as Appendix C.

*a. Would the project cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?*

**Records Search Results.** A records search of the project site and a 0.5-mile radius was conducted on May 5, 2020, by staff at the SSJVIC. The SSJVIC reported nine previous cultural studies encompassing portions of the project area that occurred between 1982 and 2015, and five additional studies in the surrounding 0.5-mile area. Of the nine studies within the project area, seven had negative results. The Peoples Ditch is the only previously recorded resource within the project area. In addition, the Southern Pacific Railroad/San Joaquin Valley Railroad is just outside the project area's northern boundary. Two additional built environment resources were identified within a 0.5-mile radius of the project area and one additional resource is also within 0.5 mile of the project area.

**Buried Site Sensitivity Assessment.** Geologic and soil data derived from the National Resources Conservation Service Web Soil Survey identify only one soil type within the project area, consisting of Nord coarse to fine sandy loam. Based on this soil type, the entire project area is encompassed by

<sup>10</sup> Applied EarthWorks, Inc. 2020. *Cultural Resource Inventory for the Hanford Place Medical and Mixed-Use Property Project in the City of Hanford, Kings County, California*. August.

a soil type and landform that have high or very high potential for containing anthropogenic paleosols with intact cultural deposits. Adding to this sensitivity is the presence of Dry Creek within the project area during prehistory, which would have provided rich habitat and other resources for Native American groups. Dry Creek was a naturally occurring intermittent stream that was modified during Hanford's early settlement period. However, it is likely that portions of the project area have been disturbed by past infill of Dry Creek and the construction of Peoples Ditch in addition to impacts related to historic-era agricultural and domestic activities in the eastern portion of the project area. In these areas of disturbance, the sensitivity for intact and well-preserved buried sites is moderate, low, or none.

This evidence of modern disturbance notwithstanding, due to the very high sensitivity of the soil type in the project area, and because over excavation and recompact of soil is recommended to mitigate the effects of potential hydrocompaction to at least 7 feet below the existing grade and to a distance of at least 10 feet beyond the perimeter of the planned buildings and surrounding improvements, limited subsurface archaeological testing to confirm the presence/absence of anthropogenic paleosols or intact cultural resource deposits is recommended. Based on the findings of subsurface archaeological testing, archaeological data recovery to assess prehistoric cultural deposits and cultural resource monitoring during ground disturbing construction activities may be needed. As such, implementation of Mitigation Measure CULT-1 would be required.

**Field Survey Results.** During the field survey, one historic-era refuse scatter (AE-4167-01) and one historic-era isolate (AE-4167-ISO-01) were observed. The artifacts date to the first half of the twentieth century, suggesting the deposit may be associated with the nonextant historical structure. In addition, the project site appears to have been impacted by previous agricultural activity that would have displaced artifacts within a few feet of their original placement. The condition of the subsurface deposit is unknown as it was not visible during the pedestrian survey. No prehistoric artifact concentrations, isolated artifacts, features, or evidence of human skeletal material were observed during the survey.

**Built Environment Resources Results.** A modern segment of Peoples Ditch and the remnants of its older, now abandoned, route were observed during survey. As such, the existing California Department of Parks and Recreation cultural resource record for the Peoples Ditch was updated to record its remnant historical alignment within the project area. The new segment is less than 50 years old. The only remaining evidence of the original alignment of the ditch is its scar on the landscape and the remains of a concrete containment well at the northern end of the abandoned segment.

**Summary.** To determine whether the proposed project would cause a substantial adverse change in the significant quantities of a historical resource, additional mapping and subsurface testing would be required. Conducting additional mapping and subsurface testing would prevent potential impacts to historic and archaeological resources that could be uncovered during construction activities. Therefore, Mitigation Measures CULT-1 and CULT-2 would be required to reduce the project's potential impacts to previous unidentified historical resources that may be encountered during construction. Implementation of this mitigation measure would reduce potential impacts to less than significant.

**Mitigation Measure CULT-1**

Because of the very high sensitivity of the soil type in the project area, the possibility exists that buried archaeological deposits within the project site. Therefore, archaeological monitoring must be conducted during ground-disturbing construction activities in native soil, including clearing and grubbing. Monitoring should occur on a full-time basis during all excavation activities until the Project Archaeologist, based on the archaeological monitor's observations, is satisfied that there is little likelihood of encountering intact archaeological deposits. The Project Archaeologist may also determine it is appropriate to reduce monitoring to spot-checking or on a part-time basis.

Upon completion of the monitoring and, if necessary, mitigation, the archaeologist should prepare a report to document the methods and results of the monitoring. The final report should be submitted to the SSJVIC.

**Mitigation Measure CULT-2**

Additional mapping and subsurface testing of AE-4167-01 shall be conducted to evaluate its eligibility for inclusion in the California Register of Historical Resources, pursuant to California Public Resources Code (PRC) 5024.1. Additional focused subsurface testing in areas not previously disturbed by historic-era activities must be conducted to confirm presence/absence of high-sensitivity paleosols that may include intact prehistoric cultural deposits. If intact prehistoric cultural deposits are encountered during subsurface presence/absence testing, further investigation must be conducted to determine if the deposit retains integrity and is eligible for inclusion in the California Register of Historical Resources. The methods and findings of the additional studies would be presented as an addendum to the Cultural Resource Inventory for the Hanford Place Medical and Mixed-Use Property Project and would include cultural resource management recommendations to guide mitigation of potential adverse effects to any identified historical resources within the project area.

*b. Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?*

Mitigation Measures CULT-1 and CULT-2, as presented in Response 4.5.a above, would ensure that potential impacts to archaeological resources would be reduced to a less-than-significant level by conducting additional mapping and subsurface testing to prevent potential impacts to historic and archaeological resources that could be uncovered during construction activities. Therefore, the project would not cause a substantial adverse change in the significance of an archaeological resource.

*c. Would the project disturb any human remains, including those interred outside of formal cemeteries?*

Although no such remains have been identified within the project site, there is a possibility of encountering such remains, either in isolation or with prehistoric archaeological deposits. Such remains could be uncovered during project ground-disturbing activities. The project would have a significant effect on the environment if it would disturb human remains, including those interred outside of formal cemeteries.

Implementation of Mitigation Measure CULT-3 would reduce potential impacts to human remains to a less than significant level by ensuring compliance with California Health and Safety Code Section 7050.5 in the event that any human remains are encountered during project-related ground-disturbing activities.

In addition, on January 10, 2017, the City of Hanford met with the Tachi Yokut Tribe, on a different project in order to establish conditions, which would apply to all projects in the City of Hanford, which required an initial study. In order to address the concerns of the Tachi Yokut Tribe, the City is requiring the implementation of a Burial Treatment Plan as a mitigation measure. Therefore, implementation Mitigation Measure CULT-4 would ensure implementation of a Burial Treatment Plan and would reduce impacts to a less than significant level.

**Mitigation Measure CULT-3**

Any human remains encountered during project-related ground-disturbing activities shall be treated in accordance with California Health and Safety Code Section 7050.5. The project sponsor shall inform all contractor(s) performing excavation of the sensitivity of the project site for human remains and include the following directive in the appropriate contract documents:

If human remains are uncovered, all work within 50 feet of the discovery shall be halted and the Kings County Coroner notified immediately. At the same time, the on-site monitoring archaeologist shall assess the situation and consult with agencies as appropriate. Project personnel shall not collect or move any human remains or associated materials. If the human remains are of Native American origin, the Coroner must notify the California State Native American Heritage Commission (NAHC) within 24 hours of this identification. The NAHC will formally identify a Native American Most Likely Descendant (MLD)—if one is not already on-site—to inspect the site and provide recommendations for the proper treatment of the remains and associated grave goods. Such recommendations shall be carried out to the satisfaction of the NAHC prior to work resuming within 50 feet of the discovered remains.

**Mitigation Measure CULT-4**

A Burial Treatment Plan shall be entered into by the project applicant/property owner prior to any ground disturbing activities.



## 4.6 ENERGY

|                                                                                                                                                                                    | Potentially<br>Significant<br>Impact | Less Than<br>Significant with<br>Mitigation<br>Incorporated | Less Than<br>Significant<br>Impact  | No<br>Impact             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------------------------|-------------------------------------|--------------------------|
| Would the project:                                                                                                                                                                 |                                      |                                                             |                                     |                          |
| a. Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation? | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?                                                                                      | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

*a. Would the project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation?*

The proposed project would increase the demand for electricity, natural gas, and gasoline. The discussion and analysis provided below is based on the CalEEMod output included as Appendix A.

**Construction-Period Energy Use.** The anticipated construction schedule assumes that the proposed project would be built over approximately 3 years. The proposed project would require grading, site preparation, and building activities during construction.

Construction of the proposed project would require energy for the manufacture and transportation of construction materials, preparation of the site for demolition and grading activities, and construction of the residences. Petroleum fuels (e.g., diesel and gasoline) would be the primary sources of energy for these activities. Construction activities are not anticipated to result in an inefficient use of energy as gasoline and diesel fuel would be supplied by construction contractors who would conserve the use of their supplies to minimize their costs on the project. Energy usage on the project site during construction would be temporary in nature and would be relatively small in comparison to the State's available energy sources. Therefore, construction energy impacts would be less than significant.

**Operational Energy Use.** Energy use consumed by the proposed project would be associated with natural gas use, electricity consumption, and fuel used for vehicle trips associated with the project. Energy and natural gas consumption was estimated for the project using default energy intensities by building type in CalEEMod.

CalEEMod divides building electricity and natural gas use into uses that are subject to Title 24 standards and those that are not. For electricity, Title 24 uses include the major building envelope systems covered by Part 6 (California Energy Code) of Title 24 (e.g., space heating, space cooling, water heating, and ventilation). Non-Title 24 uses include all other end uses (e.g., appliances, electronics, and other miscellaneous plug-in uses). Because some lighting is not considered as part of the building envelope energy budget, CalEEMod considers lighting as a separate electricity use category. For natural gas, uses are likewise categorized as Title 24 or Non-Title 24, with Title 24 uses

including building heating and hot water end uses. Non-Title 24 natural gas uses include cooking and appliances (including pool/spa heaters).

Table 4.F, below, shows the estimated potential increased electricity, natural gas, gasoline, and diesel demand associated with the proposed project. The electricity and natural gas rates are from the CalEEMod analysis, while the gasoline and diesel rates are based on the traffic analysis in conjunction with United States Department of Transportation (DOT) fuel efficiency data.

**Table 4.F: Estimated Annual Energy Use of Proposed Project**

| Land Use                                                                                                    | Electricity Use<br>(kWh per year) | Natural Gas<br>Use<br>(therms per<br>year) | Gasoline<br>(gallons per<br>year) | Diesel (gallons<br>per year) |
|-------------------------------------------------------------------------------------------------------------|-----------------------------------|--------------------------------------------|-----------------------------------|------------------------------|
| Ambulatory Surgery Center, Specialty Clinic,<br>Medical Office Building, and Psychiatric<br>Health Facility | 1,395,423                         | 26,572                                     | 67,277                            | 55,850                       |
| Hotel and Conference Center                                                                                 | 1,403,506                         | 30,168                                     | 32,955                            | 27,358                       |
| Nursing College                                                                                             | 365,853                           | 15,649                                     | 30,809                            | 25,576                       |
| Skilled Nursing Facility, Memory Care,<br>Assisted Living Facility                                          | 701,757                           | 24,991                                     | 37,905                            | 31,467                       |
| Multi-Family Apartments                                                                                     | 454,375                           | 16,181                                     | 32,930                            | 27,337                       |
| Medical/Commercial                                                                                          | 427,442                           | 2,508                                      | 62,119                            | 51,569                       |
| Parking Lot                                                                                                 | 596,800                           | 0                                          | 0                                 | 0                            |
| <b>Total</b>                                                                                                | <b>5,345,159</b>                  | <b>116,068</b>                             | <b>263,994</b>                    | <b>219,156</b>               |

Source: LSA (March 2023).

As shown in Table 4.F, the estimated potential increased electricity demand associated with the proposed project is 5,345,159 kilowatt-hours (kWh) per year. In 2021, California consumed approximately 280,738 gigawatt-hours (GWh) or 280,738,376,720 kWh.<sup>11</sup> Of this total, Kings County consumed 1,980 GWh or 1,980,705,673 kWh.<sup>12</sup> Therefore, electricity demand associated with the proposed project would only be approximately 0.27 percent of Kings County's total electricity demand.

The estimated potential increased natural gas demand associated with the proposed project is 116,068 therms per year, as shown in Table 4.F. In 2021, California consumed approximately 11,923 million therms or 11,923,705,642 therms, while Kings County consumed approximately 64 million therms or approximately 64,004,283 therms.<sup>13</sup> Therefore, natural gas demand associated with the proposed project would only be approximately 0.18 percent of Kings County's total natural gas demand.

<sup>11</sup> California Energy Commission. 2022b. Energy Consumption Data Management Service. Electricity Consumption by County and Entity. Website: [www.ecdms.energy.ca.gov/elecbycounty.aspx](http://www.ecdms.energy.ca.gov/elecbycounty.aspx) (accessed March 2023).

<sup>12</sup> Ibid.

<sup>13</sup> California Energy Commission. 2022c. Energy Consumption Data Management Service. Gas Consumption by County and Entity. Website: [www.ecdms.energy.ca.gov/gasbycounty.aspx](http://www.ecdms.energy.ca.gov/gasbycounty.aspx) (accessed March 2023).

In addition, the proposed project would result in energy usage associated with gasoline and diesel to fuel project-related trips. The average fuel economy for light-duty vehicles (autos, pickups, vans, and SUVs) in the United States has steadily increased from about 14.9 miles per gallon (mpg) in 1980 to 22.9 mpg in 2020.<sup>14</sup> The average fuel economy for heavy-duty trucks in the United States has also steadily increased, from 5.7 mpg in 2013 to a projected 8.0 mpg in 2021.<sup>15</sup>

Using the average USEPA gasoline fuel economy estimates for 2020, the California diesel fuel economy estimates for 2021, and the traffic data from the project traffic analysis, the proposed project would result in the annual consumption of approximately 263,994 gallons of gasoline and 219,156 gallons of diesel. In 2019, vehicles in California consumed approximately 15.6 billion gallons of gasoline and 3.8 billion gallons of diesel fuel.<sup>16</sup> Therefore, gasoline and diesel demand generated by vehicle trips associated with the proposed project would be a minimal fraction of gasoline and diesel fuel consumption in California and Kings County.

In addition, vehicles associated with trips to and from the project site would be subject to fuel economy and efficiency standards, which are applicable throughout the State. As such, the fuel efficiency of vehicles associated with project operations would increase throughout the life of the proposed project. Therefore, implementation of the proposed project would not result in a substantial increase in transportation-related energy uses.

The proposed project would be constructed to CALGreen standards, which would help to reduce energy and natural gas consumption. Therefore, the proposed project would not result in the wasteful, inefficient, or unnecessary consumption of fuel or energy and would incorporate renewable energy or energy efficiency measures into building design, equipment use, and transportation. Construction and operation period impacts related to consumption of energy resources would be less than significant.

*b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?*

In 2002, the Legislature passed Senate Bill 1389, which required the California Energy Commission (CEC) to develop an integrated energy plan every two years for electricity, natural gas, and transportation fuels, for the California Energy Policy Report. The plan calls for the State to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies a number of strategies, including assistance to public agencies and fleet operators in implementing incentive programs for zero emission (ZE) vehicles and their

<sup>14</sup> U.S. Department of Transportation (DOT). "Table 4-23: Average Fuel Efficiency of U.S. Light Duty Vehicles." Website: <https://www.bts.gov/content/average-fuel-efficiency-us-light-duty-vehicles> (accessed March 2023).

<sup>15</sup> Ibid.

<sup>16</sup> CEC. n.d. California Gasoline Data, Facts, and Statistics. Website: [www.energy.ca.gov/data-reports/energy-almanac/transportation-energy/california-gasoline-data-facts-and-statistics](http://www.energy.ca.gov/data-reports/energy-almanac/transportation-energy/california-gasoline-data-facts-and-statistics) (accessed March 2023).

infrastructure needs, and encouragement of urban designs that reduce vehicle miles traveled (VMT) and accommodate pedestrian and bicycle access.

The most recently adopted report includes the 2021 Integrated Energy Policy Report<sup>17</sup> and the 2022 Integrated Energy Policy Report Update.<sup>18</sup> The Integrated Energy Policy Report provides the results of the CEC's assessments of a variety of energy issues facing California. Many of these issues will require action if the State is to meet its climate, energy, air quality, and other environmental goals while maintaining energy reliability and controlling costs. The Integrated Energy Policy Report covers a broad range of topics, including implementation of Senate Bill 350, integrated resource planning, distributed energy resources, transportation electrification, solutions to increase resiliency in the electricity sector, energy efficiency, transportation electrification, barriers faced by disadvantaged communities, demand response, transmission and landscape-scale planning, the California Energy Demand Preliminary Forecast, the preliminary transportation energy demand forecast, renewable gas (in response to Senate Bill 1383), updates on California electricity reliability, natural gas outlook, and climate adaptation and resiliency.

As indicated above, energy usage on the project site during construction would be temporary in nature. In addition, energy usage associated with operation of the proposed project would be relatively small in comparison to the State's available energy sources and energy impacts would be negligible at the regional level. Because California's energy conservation planning actions are conducted at a regional level, and because the project's total impact to regional energy supplies would be minor, the proposed project would not conflict with California's energy conservation plans as described in the CEC's Integrated Energy Policy Report. Thus, as shown above, the project would avoid or reduce the inefficient, wasteful, and unnecessary consumption of energy and not result in any irreversible or irretrievable commitments of energy. Therefore, the proposed project would not result in the wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation and this impact would be less than significant.

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<sup>17</sup> CEC. 2021. *2021 Integrated Energy Policy Report*. California Energy Commission. Docket Number: 21-IEPR-01.

<sup>18</sup> CEC. 2022a. *2020 Integrated Energy Policy Report Update*. California Energy Commission. Docket Number: 22-IEPR-01.

## 4.7 GEOLOGY AND SOILS

|                                                                                                                                                                                                                                                                                        | Potentially<br>Significant<br>Impact | Less Than<br>Significant with<br>Mitigation<br>Incorporated | Less Than<br>Significant<br>Impact  | No<br>Impact                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------------------------|-------------------------------------|-------------------------------------|
| Would the project:                                                                                                                                                                                                                                                                     |                                      |                                                             |                                     |                                     |
| a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:                                                                                                                                                         |                                      |                                                             |                                     |                                     |
| i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42. | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| ii. Strong seismic ground shaking?                                                                                                                                                                                                                                                     | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| iii. Seismic-related ground failure, including liquefaction?                                                                                                                                                                                                                           | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| iv. Landslides?                                                                                                                                                                                                                                                                        | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| b. Result in substantial soil erosion or the loss of topsoil?                                                                                                                                                                                                                          | <input type="checkbox"/>             | <input checked="" type="checkbox"/>                         | <input type="checkbox"/>            | <input type="checkbox"/>            |
| c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?                                                     | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?                                                                                                                    | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| e. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?                                                                                                   | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?                                                                                                                                                                                | <input type="checkbox"/>             | <input checked="" type="checkbox"/>                         | <input type="checkbox"/>            | <input type="checkbox"/>            |

This section is based on the Preliminary Geotechnical Investigation and Geologic and Seismic Hazards Evaluation Report.<sup>19</sup> The Preliminary Geotechnical Investigation and Geologic and Seismic Hazards Evaluation Report is included as Appendix D.

a. *Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:*

i. *Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.*

The project site is not located within a currently designated Alquist-Priolo Earthquake Zone. In addition, no known active or potentially active faults or fault traces are located in the project vicinity and no major fault systems are known to exist in Kings County.<sup>20</sup> The project site is

<sup>19</sup> Kleinfelder. 2020. *Preliminary Geotechnical Investigation and Geologic and Seismic Hazards Evaluation Report Proposed Hanford Place, Medical and Mixed-Use Property Hanford, California*. June 9.

<sup>20</sup> Hanford, City of. 2017, op. cit.

located approximately 58 miles east of the San Andreas fault and approximately 42 miles east of the Great Valley fault. A major seismic event on these fault segments may cause significant ground shaking at the site.<sup>21</sup> However, as no known active, or potentially active faults cross or project toward the project site, the potential for fault-related surface rupture at the site is considered very low.<sup>22</sup> In addition, the proposed project would be built to current building codes and standards to reduce the potential for structural failure caused by ground shaking and other geologic hazards. Therefore, no people or structures would be exposed to potential substantial adverse effects, including the risk of loss, injury, or death from the rupture of a known earthquake fault as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map, and impacts would be less than significant.

*ii. Strong seismic ground shaking?*

As identified above, no known active or potentially active faults or fault traces are located in the project vicinity and no major fault systems are known to exist in Kings County. Ground shaking is the most likely damaging effect of an earthquake in Hanford. However, as no known active, or potentially active faults cross or project toward the project site, the potential for fault-related surface rupture at the site is considered very low.<sup>23</sup> In addition, the proposed project would be built to current building codes and standards to reduce the potential for structural failure caused by ground shaking and other geologic hazards. Therefore, impacts related to strong seismic ground shaking would be less than significant.

*iii. Seismic-related ground failure, including liquefaction?*

Secondary impacts of earthquakes can include landslides, seiches, liquefaction, and dam failure.<sup>24</sup> Liquefaction describes a condition in which a saturated, cohesionless soil loses shear strength during earthquake shocks. Ground motion from an earthquake may induce cyclic reversals of shearing strains of large amplitude. Lateral and vertical movements of the soil mass, combined with loss of bearing strength, usually result from this phenomenon. Historically, liquefaction of soils has caused severe damage to structures, berms, levees and roads. Liquefaction potential depends on soil type, void ratio, depth to groundwater, duration of shaking and confining pressures over the potentially liquefiable soil mass. Fine, well-sorted, loose sand, shallow groundwater, severe seismic ground motion and particularly long durations of ground shaking are conditions conducive for liquefaction. Soils in Hanford do not have significant liquefaction potential.<sup>25</sup> Hanford is located in a stable geologic formation, so the effects of ground shaking on soil stability should be minimal. As such, the proposed project would not expose people or structures to potential substantial effects associated with seismic-related ground failure, including liquefaction. Therefore, this impact is less than significant.

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<sup>21</sup> Kleinfelder. 2020, op. cit.

<sup>22</sup> Ibid.

<sup>23</sup> Ibid.

<sup>24</sup> Hanford, City of. 2014. *General Plan Background Report - Hanford, California*. March. Website: [cms6.revize.com/revize/hanfordca/document\\_center/Planning/General%20Plan/2034%20General%20Plan%20Background%20Report.pdf](https://cms6.revize.com/revize/hanfordca/document_center/Planning/General%20Plan/2034%20General%20Plan%20Background%20Report.pdf) (accessed March 2023).

<sup>25</sup> Ibid.

*iv. Landslides?*

As discussed above, secondary impacts of earthquakes can include landslides, seiches, liquefaction, and dam failure. However, Hanford is located in a stable geologic formation, so the effects of ground shaking on soil stability should be minimal. In addition, because the project site is generally level, the proposed project would not expose people or structures to potential substantial adverse effects associated with landslides. Therefore, impacts related to landslides would be less than significant.

*b. Would the project result in substantial soil erosion or the loss of topsoil?*

Soil erosion is a process whereby soil materials are worn away and transported to another area, either by wind or water. Rates of erosion can vary depending on the soil material and structure, placement, and human activity. Soil containing high amounts of silt can be easily eroded, while sandy soils are less susceptible. Excessive soil erosion can eventually damage building foundations and roadways. Erosion is most likely to occur on sloped areas with exposed soil, especially where unnatural slopes are created by cut-and-fill activities. Soil erosion rates can be higher during the construction phase. Typically, the soil erosion potential is reduced once the soil is graded and covered with concrete, structures, or asphalt.

Implementation of the proposed project would include grading activities that could result in short-term soil erosion during the construction period. Exposed soils are considered erodible when subjected to concentrated surface flow or wind. Mitigation Measure GEO-1, described below, would reduce the potential for soil erosion.

**Mitigation Measure GEO-1** To reduce the potential for soil erosion during construction of the proposed project, an Erosion Control Plan shall be prepared for the project in conformance with the California Storm Water Best Management Practice Handbook for Construction Activity, prior to the start of grading.

In addition, soil erosion and loss of topsoil would be minimized through implementation of SJVAPCD Regulation VIII fugitive dust control measures and compliance with the National Pollutant Discharge Elimination System (NPDES) permit requirements. With incorporation of Mitigation Measure GEO-1 and compliance with NPDES permit requirements, construction of the proposed project would not result in substantial soil erosion or loss of topsoil. This impact would be less than significant with mitigation incorporated.

*c. Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?*

See Responses 4.7.a.iii and 4.7.a.iv above. The proposed project would not require a substantial grade change or change in topography. The project would not result in on- or off-site landslides, lateral spreading, subsidence, or liquefaction or collapse. However, some of the alluvial soils in the San Joaquin Valley are subject to hydrocompaction. Hydrocompactive soil has a relatively loose



skeletal structure, which is weakly cemented by soluble salts or a slight clay mineral content. Moisture increase breaks down the inter-particle cementation causing a collapse of the skeletal structure. The significant loss in soil volume can result in settlement of overlying structures. The project geotechnical exploration and associated laboratory testing identified the in-place relative density of the subsurface soil was relatively low and compression characteristics were moderate. Based on laboratory testing, post saturation of four soil obtained from the project site had compression characteristics that were low to moderate, indicating a possibility of collapse potential. However, with implementation of the earthwork and design recommendations included in the Preliminary Geotechnical Investigation and Geologic and Seismic Hazards Evaluation Report, impacts would be less than significant.

*d. Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?*

Expansive soils possess a “shrink-swell” characteristic. Shrink-swell is the cyclic change in volume (expansion and contraction) that occurs in fine-grained clay sediments from the process of wetting and drying. Structural damage may occur over a long period of time, usually the result of inadequate soil and foundation engineering, or the placement of structures directly on expansive soils. Based on the borings conducted for the Preliminary Geotechnical Investigation and Geologic and Seismic Hazards Evaluation Report, expansive soils were not encountered. Furthermore, based on review of soil survey, expansive soil was not identified within the project area. Expansive soils are not anticipated within the influence of foundation systems or zone of cyclic moisture changes, and therefore, would not dictate the need for special grading or special footing and concrete slab-on-grade design.<sup>26</sup> Therefore, the project would result in a less than significant impact related to substantial risks to life or property due to expansive soils.

*e. Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?*

The proposed project would not require the use of septic tanks or other alternative wastewater disposal systems. Therefore, no impact would occur.

*f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?*

Paleontological resources are the mineralized (fossilized) remains of prehistoric plant and animal life exclusive of human remains or artifacts. Fossil remains such as bones, teeth, shells, and leaves are found in geologic deposits (rock formations) where they were originally buried. Fossil remains are considered to be important as they provide indicators of the earth’s chronology and history. These resources are afforded protection under CEQA and are considered to be limited and nonrenewable, and they provide invaluable scientific and educational data. Due to the sensitive nature of these paleontological resources, they are not mapped.

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<sup>26</sup> Kleinfelder. 2020, op. cit.

Implementation of the proposed project would require ground disturbing construction activities that may inadvertently encounter and damage paleontological resources. Should this occur, project construction at both well sites may result in the destruction of a unique paleontological site, resulting in a potentially significant impact. Mitigation Measure GEO-2 would reduce this impact to less than significant by redirecting ground-disturbing activities, consulting with agencies as appropriate, and making recommendations for the treatment of the discovery in the event that any human remains are encountered during project-related ground-disturbing activities.

The following mitigation measure would reduce the paleontological resource impacts associated with the proposed project to a less-than-significant level.

**Mitigation Measure GEO-2**

The project applicant shall inform its contractor(s) of the sensitivity of the project area for paleontological resources. Should paleontological resources be encountered during project subsurface construction activities, all ground-disturbing activities within 25 feet shall be redirected and a qualified paleontologist contacted to assess the situation, consult with agencies as appropriate, and make recommendations for the treatment of the discovery. If found to be significant, and project activities cannot avoid the paleontological resources, adverse effects to paleontological resources shall be mitigated. Mitigation may include monitoring, recording the fossil locality, data recovery and analysis, a final report, and accessioning the fossil material and technical report to a paleontological repository. Public educational outreach may also be appropriate. Upon completion of the assessment, a report documenting methods, findings, and recommendations shall be prepared and submitted to the City for review, and (if paleontological materials are recovered) a paleontological repository, such as the University of California Museum of Paleontology (UCMP). The City shall verify that the above directive has been included in the appropriate contract documents.

## 4.8 GREENHOUSE GAS EMISSIONS

|                                                                                                                                  | Potentially<br>Significant<br>Impact | Less Than<br>Significant with<br>Mitigation<br>Incorporated | Less Than<br>Significant<br>Impact  | No<br>Impact             |
|----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------------------------|-------------------------------------|--------------------------|
| Would the project:                                                                                                               |                                      |                                                             |                                     |                          |
| a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?      | <input type="checkbox"/>             | <input checked="" type="checkbox"/>                         | <input type="checkbox"/>            | <input type="checkbox"/> |
| b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases? | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

*a. Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?*

Greenhouse gas emissions (GHGs) are present in the atmosphere naturally, and are released by natural sources, or are formed from secondary reactions taking place in the atmosphere. However, over the last 200 years, human activities have caused substantial quantities of GHGs to be released into the atmosphere. These extra emissions are increasing GHG concentrations in the atmosphere, and enhancing the natural greenhouse effect, which is believed to be causing global climate change. The gases that are widely seen as the principal contributors to human-induced global climate change are:

- Carbon dioxide (CO<sub>2</sub>)
- Methane (CH<sub>4</sub>)
- Nitrous oxide (N<sub>2</sub>O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulfur Hexafluoride (SF<sub>6</sub>)

Certain gases, such as water vapor, are short-lived in the atmosphere. Others remain in the atmosphere for significant periods of time, contributing to climate change in the long term. Water vapor is excluded from the list of GHGs above because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation.

These gases vary considerably in terms of Global Warming Potential (GWP), which is a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. GWP is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and the length of time that the gas remains in the atmosphere ("atmospheric lifetime").

The GWP of each gas is measured relative to CO<sub>2</sub>, the most abundant GHG; the definition of GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to the ratio of heat trapped by one unit mass of CO<sub>2</sub> over a specified time period. GHG emissions are typically measured in terms of pounds or tons of "CO<sub>2</sub> equivalents" (CO<sub>2</sub>e).

This section discusses the proposed project’s potential impacts related to the release of GHG emissions for both construction and project operation. Section 15064.4 of the *State CEQA Guidelines* states that: “A lead agency should make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project.” In performing that analysis, the lead agency has discretion to determine whether to use a model or methodology to quantify GHG emissions, or to rely on a qualitative analysis or performance-based standards. In making a determination as to the significance of potential impacts, the lead agency then considers the extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting, whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project, and the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

Neither the City of Hanford, nor the SJVAPCD has developed or adopted numeric GHG significance thresholds. Therefore, this analysis evaluates the GHG emissions based on the project’s consistency with State GHG reduction goals.

**Construction Activities.** Construction activities associated with the proposed project would produce combustion emissions from various sources. During construction, GHGs would be emitted through the operation of construction equipment and from worker and builder supply vendor vehicles, each of which typically use fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs such as CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O. Furthermore, CH<sub>4</sub> is emitted during the fueling of heavy equipment. Exhaust emissions from on-site construction activities would vary daily as construction activity levels change.

Total GHG emissions generated during all phases of construction were combined and are presented in Table 4.G. The SJVAPCD does not recommend assessing the significance of construction-related emissions. However, other jurisdictions, such as the South Coast Air Quality Management District (SCAQMD) and the Sacramento Metropolitan Air Quality Management District (SMAQMD), have concluded that construction emissions should be included since they may remain in the atmosphere for years after construction is complete. In order to account for the construction emissions, amortization of the total emissions generated during construction were based on the life of the development (nonresidential— 30 years) and added to the operational emissions.

**Table 4.G: Project Construction GHG Emissions**

| Year                    | Metric Tons of CO <sub>2</sub> e per Year |
|-------------------------|-------------------------------------------|
| 2024                    | 815.0                                     |
| 2025                    | 623.0                                     |
| 2026                    | 525.0                                     |
| 2027                    | 11.0                                      |
| <b>Total</b>            | <b>1,973.0</b>                            |
| Amortized over 30 years | 65.8                                      |

Source: LSA (March 2023).

As shown in Table 4.G, it is estimated that construction of the proposed project would generate approximately 1,973.0 metric tons of CO<sub>2</sub>e. When considered over the 30-year life of the project, the total amortized construction emissions for the proposed project would be 65.8 metric tons of CO<sub>2</sub>e per year.

**Operational Emissions.** Long-term GHG emissions are typically generated from mobile sources (e.g., cars, trucks, and buses), area sources (e.g., maintenance activities and landscaping), indirect emissions from sources associated with energy consumption, waste sources (land filling and waste disposal), and water sources (water supply and conveyance, treatment, and distribution). Mobile-source GHG emissions would include project-generated vehicle trips to and from the project. Area-source emissions would be associated with activities such as landscaping and maintenance on the project site. Energy source emissions would be generated at off-site utility providers as a result of increased electricity demand generated by the project. Waste source emissions generated by the proposed project include energy generated by land filling and other methods of disposal related to transporting and managing project generated waste. In addition, water source emissions associated with the proposed project are generated by water supply and conveyance, water treatment, water distribution, and wastewater treatment.

Emissions estimates for operation of the proposed project were calculated using CalEEMod. Model results are shown in Table 4.H. Trip generation rates for the project were based on the project's trip generation estimates, as identified in Section 4.17, Transportation. However, as discussed in Section 4.17, approximately 41,500 square feet of commercial/office uses is proposed. These uses would generate fewer trips than the 114,000 square feet of commercial/office uses that is analyzed in the proposed project trip generation estimate. The trip generation in CalEEMod was adjusted to reflect 41,500 square feet of commercial/office uses. As such, CalEEMod assumes a total of approximately 5,239 ADT, including 1,393 ADT for the Ambulatory Surgery Center, Specialty Clinic, Medical Office Building, and Psychiatric Health Facility, 682 ADT for the Hotel and Conference Center, 638 ADT for the Nursing College, 662 ADT for the Skilled Nursing Facility, Memory Care, Assisted Living Facility, 576 ADT for the Multi-Family Apartments, and 1,287 ADT for the Medical/Commercial uses based on the project's trip generation and taking into account a 10 percent reduction for internal trips. In addition, this analysis assumes the proposed project would be built to current Title 24 building standards. Where project-specific data were not available, default assumptions from CalEEMod were used to estimate project emissions.

**Table 4.H: Operational GHG Emissions**

| Emissions Category       | Operational Emissions (Metric Tons per Year) |                 |                  |                   |                  |
|--------------------------|----------------------------------------------|-----------------|------------------|-------------------|------------------|
|                          | CO <sub>2</sub>                              | CH <sub>4</sub> | N <sub>2</sub> O | CO <sub>2</sub> e | Percent of Total |
| Mobile Source            | 3,166.0                                      | 0.2             | 0.2              | 3,236.0           | 56               |
| Area Source              | 142.0                                        | 0.2             | <0.1             | 148.0             | 3                |
| Energy Source            | 1,906.0                                      | 0.1             | <0.1             | 1,912.0           | 33               |
| Water Source             | 33.9                                         | 0.8             | <0.1             | 60.6              | 1                |
| Waste Source             | 124.0                                        | 12.4            | 0.0              | 433.0             | 7                |
| <b>Total Operational</b> |                                              |                 |                  | <b>5,789.6</b>    | <b>100.0</b>     |

Source: Compiled by LSA (February 2023).

Note = Some values may not appear to add up correctly due to rounding.

CH<sub>4</sub> = methane

CO<sub>2</sub>e = carbon dioxide equivalent

CO<sub>2</sub> = carbon dioxide

N<sub>2</sub>O = nitrous oxide

As shown in Table 4.H, the proposed project would generate approximately 5,789.6 metric tons of CO<sub>2</sub>e annually.

The Kings County Association of Government Final Regional Climate Action Plan (Regional CAP) meets the requirements for a Qualified GHG Reduction Strategy and is designed to streamline environmental review of future development projects in the County consistent with *State CEQA Guidelines* Section 15183.5(b). However, the Regional CAP identifies emission reduction goals to reduce GHG emissions in the region by 15 percent below the 2005 emissions levels by 2020, consistent with Assembly Bill (AB) 32. The proposed project would not be operational until post-2020; therefore, because the Regional CAP was prepared based on the 2020 GHG targets, which are now superseded by the 2030 GHG targets established in Senate Bill (SB) 32, the Regional CAP would not be applicable for CEQA streamlining.

In addition, the SJVAPCD has not established a numeric threshold for GHG emissions. As discussed, the significance of GHG emissions may be evaluated based on locally adopted quantitative thresholds or consistency with a regional GHG reduction plan (such as a Climate Action Plan). Neither the City of Hanford, nor the SJVAPCD has developed or adopted numeric GHG significance thresholds. Therefore, the proposed project was analyzed for consistency with the 2022 Scoping Plan.

The 2022 Scoping Plan includes key project attributes that reduce operational GHG emissions in Appendix D, Local Actions<sup>27</sup>, of the 2022 Scoping Plan. As discussed in Appendix D of the 2022 Scoping Plan, absent consistency with an adequate, geographically specific GHG reduction plan such as a CEQA-qualified CAP, the first approach the State recommends for determining whether a proposed residential or mixed-use residential development would align with the State's climate goals is to examine whether the project includes key project attributes that reduce operational GHG emissions while simultaneously advancing fair housing. The following project attributes result in reduced GHG emissions from residential and mixed-use development. Residential and mixed-use projects that have all of the key project attributes in Table 4.I would accommodate growth in a manner consistent with State GHG reduction and equity prioritization goals.

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<sup>27</sup> CARB, 2022. *2022 Scoping Plan Appendix D Local Actions*. November. Website: <https://ww2.arb.ca.gov/sites/default/files/2022-11/2022-sp-appendix-d-local-actions.pdf> (accessed March 2023).

**Table 4.I: Project Consistency with the 2022 Scoping Plan Key Residential and Mixed-Use Project Attributes that Reduce GHGs**

| Priority Areas                        | Key Project Attribute                                                                                                                                                                                                                                            | Project Consistency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Transportation Electrification</b> | Provides EV charging infrastructure that, at minimum, meets the most ambitious voluntary standard in the California Green Building Standards Code at the time of project approval.                                                                               | <b>Consistent with Mitigation Measure GHG-1.</b> CALGreen requires provision of infrastructure to accommodate EV chargers. It is not yet known whether the proposed project would include electric vehicle charging; therefore, implementation of Mitigation Measure GHG-1 would be required to ensure the proposed project would provide electric vehicle charging. With implementation of Mitigation Measure GHG-1, the proposed project would be consistent with this key project attribute.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>VMT Reduction</b>                  | Is located on infill sites that are surrounded by existing urban uses and reuses or redevelops previously undeveloped or underutilized land that is presently served by existing utilities and essential public services (e.g., transit, streets, water, sewer). | <b>Consistent.</b> The project site is located in an area with a mix of land uses, including residential, commercial, and medical uses that are presently served by existing utilities and essential public services (e.g., transit, streets, water, sewer). In addition, as discussed in Section 4.17, the proposed project would result in a less-than-significant VMT impact. Therefore, the proposed project would be consistent with this key project attribute.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | Does not result in the loss or conversion of natural and working lands.                                                                                                                                                                                          | <b>Consistent.</b> The project site is classified as Grazing Land and is not zoned for agricultural uses or enrolled in a Williamson Act Contract. The State Department of Conservation classifies the project site as Non-Enrolled Land. The project site is not located on land that is designated as Prime Farmland or Farmland of State Importance. In addition, the project site is currently vacant and is not zoned for agricultural uses. As such, the proposed project would be consistent with this key project attribute.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                       | Consists of transit-supportive densities (minimum of 20 residential dwelling units per acre) or is in proximity to existing transit stops (within a half mile), or satisfies more detailed and stringent criteria specified in the region's SCS.                 | <b>Consistent.</b> The proposed project would not include 20 residential dwelling units per acre; however, the project site is located within 0.25 mile of a transit stop. In addition, the proposed project would develop a medical and mixed-use development and would construct 15 buildings consisting of medical outpatient clinic services, a hotel and conference center, specialized education, retail, medical office, skilled nursing and assisted living, and multi-family residential uses, as well as a bio infiltration basin, associated open space, circulation and parking, and infrastructure improvements. In addition, the proposed project would include apartments that allow employees of the project medical office and service facilities to live within walking distance. The proposed project would also provide pedestrian infrastructure connecting to neighboring uses. The roads serving the project are designed for low speed and would be conducive to bicycle use. As such, the project would promote initiatives to reduce vehicle trips and VMT and would increase the use of alternate means of transportation. |



**Table 4.I: Project Consistency with the 2022 Scoping Plan Key Residential and Mixed-Use Project Attributes that Reduce GHGs**

| Priority Areas                  | Key Project Attribute                                                                                                                                                                                                                                                                                                                                                                                                           | Project Consistency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                 | As such, the proposed project would be consistent with this key project attribute.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                 | Reduces parking requirements by: eliminating parking requirements or including maximum allowable parking ratios (i.e., the ratio of parking spaces to residential units or square feet); or providing residential parking supply at a ratio of less than one parking space per dwelling unit; or for multifamily residential development, requiring parking costs to be unbundled from costs to rent or own a residential unit. | <b>Consistent.</b> The proposed project would consist of 15 buildings consisting of medical outpatient clinic services, a hotel and conference center, specialized education, retail, medical office, skilled nursing and assisted living, and multi-family residential uses. The proposed project would provide 1,466 parking spaces throughout the project site. Based on the proposed uses when compared to the number of parking spaces, the proposed project would be consistent with this key project attribute.                                                                                              |
|                                 | At least 20 percent of units included are affordable to lower-income residents.                                                                                                                                                                                                                                                                                                                                                 | <b>Consistent.</b> The proposed project would not include affordable residential units. However, the proposed project would include apartments that allow employees of the project medical office and service facilities to live within walking distance. In addition, the proposed project would include Skilled Nursing Facility, Memory Care, Assisted Living Facility uses. Although the proposed project would not include affordable housing, the proposed project would provide needed multi-family and senior housing. Therefore, the proposed project would be consistent with this key project attribute. |
|                                 | Results in no net loss of existing affordable units.                                                                                                                                                                                                                                                                                                                                                                            | <b>Consistent.</b> The proposed project would not result in the removal of any existing residential units. As such, the proposed project would be consistent with this key project attribute.                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Building Decarbonization</b> | Uses all-electric appliances without any natural gas connections and does not use propane or other fossil fuels for space heating, water heating, or indoor cooking.                                                                                                                                                                                                                                                            | <b>Consistent</b> The proposed project would be consistent with State building code requirements as Title 24 advances to implement the building decarbonization goals from the 2022 Scoping Plan. As such, the proposed project would be consistent with this key project attribute.                                                                                                                                                                                                                                                                                                                                |

Source: Compiled by LSA (February 2023).

With implementation of Mitigation Measure GHG-1, the proposed project would be consistent with the 2022 Scoping Plan key residential and mixed-use project attributes related to EV charging requirements and building electrification. Therefore, with implementation of Mitigation Measure GHG-1, the proposed project would be consistent with all project attributes in the 2022 Scoping Plan GHG emission thresholds.

**Mitigation Measure GHG-1**

In order to meet the 2022 Scoping Plan greenhouse gas (GHG) requirements, consistent with State GHG reduction and equity prioritization goals, the proposed project shall provide electric vehicle charging capabilities that meet the most ambitious

voluntary standard in the California Green Building Standards Code at the time of project approval as part of the final project design.

Implementation of Mitigation Measure GHG-1 would ensure that the proposed project would be consistent with all project attributes in the 2022 Scoping Plan GHG emission thresholds. As such, the proposed project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. Impacts would be less than significant with mitigation.

*b. Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?*

The following analysis evaluates the proposed project's consistency with adopted plans to reduce GHG emissions. The City of Hanford adopted the Regional CAP in 2014. The CAP includes a GHG inventory, a benchmarking/goal-setting process, and identifies a reduction target for 2020. This allowed the City to take advantage of the streamlining provisions contained in the *State CEQA Guidelines* amendments adopted for SB 97 and clarifications provided in the CEQA Guidelines amendments adopted on December 28, 2018. Although the CAP does not include a target for 2030, the measures in the plan will continue to provide reductions after the milestone year and help demonstrate continued progress toward achieving the SB 32 2030 target.

**Regional CAP.** The CAP includes a number of policies that support emission reductions from new development. The applicable policies and a discussion of the project's consistency with the policies are provided in Table 4.J. The project is consistent with all applicable policies.

In summary, the proposed project would incorporate a number of features that would minimize GHG emissions. These features are consistent with project-level strategies identified by the Regional CAP and CARB's Scoping Plan. As demonstrated in the impact analysis above, the proposed project would not significantly hinder or delay the State's ability to meet the reduction targets contained in AB 32 or SB 32 or conflict with implementation of the Scoping Plan. The proposed project would promote the goals of the Scoping Plan through implementation of design measures that reduce energy consumption, water consumption, and reduction in VMT. Therefore, the proposed project would not conflict with any plans to reduce GHG emissions. The impact would be less than significant. No mitigation would be required.

**Table 4.J: Consistency with the Regional Climate Action Plan**

| Climate Action Plan Policy                                                                                                                                                                                               | Project Consistency                                                                                                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>E-4.1</b> Encourage local homebuilders to participate in the New Solar Homes Partnership to install solar PV systems on qualifying new homes. (Community)                                                             | <b>Consistent.</b> The proposed project would comply with the latest CALGreen solar readiness and installation requirements.                                                           |
| <b>E-4.2</b> Work with the building industry to incorporate designs improving solar readiness into building plans through voluntary green building guidelines. (Community)                                               | <b>Consistent.</b> The proposed project would comply with the latest CALGreen solar readiness and installation requirements.                                                           |
| <b>E-5.2</b> Provide project applicants with green building resources, including the SJVAPCD's Best Performance Standards list for GHG reductions, and promote workshops offered by community organizations. (Community) | <b>Consistent..</b> The proposed project would include sustainability features in the project design in accordance with SJVAPCD requirements, CALGreen, and City of Hanford standards. |

**Table 4.J: Consistency with the Regional Climate Action Plan**

| Climate Action Plan Policy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Project Consistency                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TL-1.1</b> Support and encourage mixed-use and medium- and high-density land use categories located within ¼ mile of a transit stop, park and ride facility, or existing developed areas, by allowing flexible zoning and/or density bonuses for applicable projects. (Community)                                                                                                                                                                                                                                                      | <b>Consistent.</b> The project site is located within 0.25 mile of a transit stop. The proposed project would consist of mixed uses with high-density residential, hotel, and medical office uses.                    |
| <b>TL-1.2</b> Prioritize infill development by publicly providing the location and zoning of infill sites on the local jurisdiction's website and working with developers to expedite applications. (Community)                                                                                                                                                                                                                                                                                                                           | <b>Consistent.</b> The project site is an infill location.                                                                                                                                                            |
| <b>TL-1.3</b> Allow live/work developments that permit residents to live at their place of work and thereby reduce VMT and associated GHG emissions. (Community)                                                                                                                                                                                                                                                                                                                                                                          | <b>Consistent.</b> The proposed project would include apartments that allow employees of the project medical office and service facilities to live within walking distance.                                           |
| <b>TL-2.3</b> Establish minimum design criteria for bicycle and pedestrian circulation and implement through the design review process. (Community)                                                                                                                                                                                                                                                                                                                                                                                       | <b>Consistent.</b> The proposed project would provide pedestrian infrastructure connecting to neighboring uses. The roads serving the project are designed for low speed and would be conducive to bicycle use.       |
| <b>TL-2.4</b> Encourage the installation of adequate and secure bicycle parking at all multi-family residential, commercial, governmental, and recreational locations throughout the region. (Community)                                                                                                                                                                                                                                                                                                                                  | <b>Consistent.</b> The proposed project would comply with CALGreen Code requirements for bicycle parking.                                                                                                             |
| <b>TL-2.5</b> Support land use planning that will promote pedestrian and bicyclist access to and from new development by encouraging land use and subdivision designs that provide safe bicycle and pedestrian circulation, including bicycle parking facilities and internal bicycle and pedestrian routes, where feasible. (Community)                                                                                                                                                                                                  | <b>Consistent.</b> The proposed project would comply with all applicable City design standards related to safe bicycle and pedestrian circulation.                                                                    |
| <b>TL-3.4</b> Support and encourage new development that provides safe routes to adjacent transit stops, where applicable. (Community)                                                                                                                                                                                                                                                                                                                                                                                                    | <b>Consistent.</b> The proposed project would comply with City design standards that provide a safe route to a nearby transit stop.                                                                                   |
| <b>TL-4.2</b> Work with employers and developers to provide affordable transportation alternatives and telecommuting options to serve both new and existing land uses. (Community)                                                                                                                                                                                                                                                                                                                                                        | <b>Consistent.</b> The proposed project's tenants would be able to participate in commute services offered by the Kings County Association of Governments and the City.                                               |
| <b>TL-4.3</b> Support compliance with SJVAPCD Rule 9410 by providing guidance and resources to employers required to comply with the eTRIP Rule. The eTRIP Rule requires employers with over 100 eligible employees to establish an Employer Trip Reduction Implementation Plan (eTRIP) to encourage employees to reduce single-occupancy vehicle trips by providing end of trip facilities such as preferential parking for vanpools and rideshare, bicycle parking, and other facilities suitable for the type of business. (Community) | <b>Consistent.</b> Tenants with over 100 eligible employees would be required to prepare an eTrip Plan that provides programs and measures that encourage ridesharing and use of alternative modes of transportation. |
| <b>TL-5.2</b> Allow the joint use of parking facilities for both private businesses and public agencies. (Community)                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Consistent.</b> The parking lots would serve multiple businesses located throughout the complex.                                                                                                                   |

Source: Kings County Association of Governments (2014) and LSA (March 2023).

#### 4.9 HAZARDS AND HAZARDOUS MATERIALS

|                                                                                                                                                                                                                                                                                   | Potentially<br>Significant<br>Impact | Less Than<br>Significant with<br>Mitigation<br>Incorporated | Less Than<br>Significant<br>Impact  | No<br>Impact                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------------------------|-------------------------------------|-------------------------------------|
| Would the project:                                                                                                                                                                                                                                                                |                                      |                                                             |                                     |                                     |
| a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?                                                                                                                                           | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?                                                                                   | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?                                                                                                                   | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?                                                    | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| e. For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area? | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?                                                                                                                                                         | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?                                                                                                                                           | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |

*a. Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?*

The proposed project would develop a medical and mixed-use development and would construct 15 buildings consisting of medical outpatient clinic services, hotel and conference center, specialized education, retail, medical office, skilled nursing and assisted living, and multi-family residential uses, as well as a bio infiltration basin, associated open space, circulation and parking, and infrastructure improvements.

Construction activities associated with the proposed project would involve the use of limited amounts of potentially hazardous materials, including but not limited to, solvents, paints, fuels, oils, and transmission fluids. However, all materials used during construction would be contained, stored, and handled in compliance with applicable standards and regulations established by the Department of Toxic Substances Control (DTSC), the U.S. Environmental Protection Agency (USEPA), and the Occupational Safety and Health Administration (OSHA). No manufacturing, industrial, or other uses utilizing large amounts of hazardous materials would occur within the project site.

Project operation would involve the use of common materials associated with residential, commercial, office, and medical uses (i.e., cleaning products, fertilizers, pesticides, herbicides, etc.) that could be potentially hazardous if handled improperly or ingested. However, these products are not considered acutely hazardous and are not generally considered unsafe. All storage, handling, and disposal of hazardous materials during project construction and operation would comply with applicable standards and regulations. The proposed residential uses would not generate significant amounts of any hazardous materials. Therefore, the proposed project would have a less-than-significant impact associated with the routine transport, use, or disposal of hazardous materials.

*b. Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?*

See Response 4.9.a, above. The proposed project would not result in a significant hazard to the public or the environment through a reasonably foreseeable upset or accident condition related to the release of hazardous materials. This impact would be less than significant.

*c. Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?*

The closest existing school is Roosevelt Elementary School, located approximately 0.1 mile south of the project site. As previously stated, the proposed project would not result in the use or emission of substantial quantities of hazardous materials that would pose a human or environmental health risk. In addition, all materials would be handled, stored, and disposed of in accordance with applicable standards and regulations. Therefore, because the proposed project does not involve activities that would result in the emission of hazardous materials or acutely hazardous substances, implementation of the proposed project would result in a less-than-significant impact in the use or emission of hazardous materials that would adversely affect an existing school.

*d. Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?*

According to the DTSC EnviroStor database,<sup>28</sup> the project site is not located on a federal superfund site, State response site, voluntary cleanup site, school cleanup site, evaluation site, school investigation site, military evaluation site, tiered permit site, or corrective action site. The project site is not included on the list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.<sup>29</sup> As a result, no impacts related to this issue are anticipated.

<sup>28</sup> California Department of Toxic Substances Control. 2019. EnviroStor. Website: [www.envirostor.dtsc.ca.gov/public](http://www.envirostor.dtsc.ca.gov/public) (accessed March 2023).

<sup>29</sup> California Environmental Protection Agency. 2019. *Government Code Section 65962.5(a)*. Website: [calepa.ca.gov/sitecleanup/corteselist/section-65962-5a/](http://calepa.ca.gov/sitecleanup/corteselist/section-65962-5a/) (accessed March 2023).

- e. Would the project be located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?*

The Hanford Municipal Airport is the closest airport and is located approximately 1.5 miles southeast of the project site. Although the project is located within 2 miles of the airport, implementation of the proposed project is not expected to result in a safety hazard or excessive noise for people residing or working in the project area. In addition, the project site is not within noise contours of the airport. As such, impacts would be less than significant. No mitigation is required.

- f. Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?*

The project site is not located along an emergency evacuation route. Vehicular access to the site would be provided by Glendale Avenue, 5th Street, and Campus Drive. The extension of these roadways would be constructed to City standards and would be dedicated as public right of way. The proposed project would also construct a roundabout, which would also be dedicated as public right of way and would be constructed to Caltrans or City-approved standards. As part of the project, Glendale Avenue would be realigned at the northwest corner of the Hanford Veterinary Hospital development. The existing knuckle would be removed, and Glendale Avenue would be realigned using speed-specific design curves. Any new portions of Glendale Avenue would be dedicated as public right of way and any portion of existing right of way not used would be abandoned. 5th Street would be extended starting at the existing alignment before realigning to the roundabout. Therefore, project implementation would not physically interfere with emergency evacuation or the City Fire Department access to and from the project site. Therefore, impacts would be less than significant as a result of project implementation and no mitigation is required.

- g. Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?*

Wildland fires occur in geographic areas that contain the types and conditions of vegetation, topography, weather, and structure density susceptible to risks associated with uncontrolled fires that can be started by lightning, improperly managed campfires, cigarettes, sparks from automobiles, and other ignition sources. According to the California Department of Forestry and Fire Protection (CAL FIRE) Very High Fire Hazard Severity Zone (VHFHSZ) Map for Kings County, the project site is not located within a High or Very High Fire Hazard Severity Zone.<sup>30</sup> Therefore, implementation of the proposed project would not expose people to significant risk of loss, injury, or death due to wildland fires and this impact would be less than significant.

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<sup>30</sup> California Department of Forestry and Fire Protection (CAL FIRE). 2007. *Fire Hazard Severity Zone in Local Resource Area (LRA)*. September 20. Website: [osfm.fire.ca.gov/media/6689/fhszl06\\_1\\_map16.pdf](https://osfm.fire.ca.gov/media/6689/fhszl06_1_map16.pdf) (accessed March 2023).

## 4.10 HYDROLOGY AND WATER QUALITY

|                                                                                                                                                                                                                        | Potentially<br>Significant<br>Impact | Less Than<br>Significant with<br>Mitigation<br>Incorporated | Less Than<br>Significant<br>Impact  | No<br>Impact             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------------------------|-------------------------------------|--------------------------|
| Would the project:                                                                                                                                                                                                     |                                      |                                                             |                                     |                          |
| a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?                                                                              | <input type="checkbox"/>             | <input checked="" type="checkbox"/>                         | <input type="checkbox"/>            | <input type="checkbox"/> |
| b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?                                  | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: | <input type="checkbox"/>             | <input checked="" type="checkbox"/>                         | <input type="checkbox"/>            | <input type="checkbox"/> |
| i. Result in substantial erosion or siltation on- or off-site;                                                                                                                                                         | <input type="checkbox"/>             | <input checked="" type="checkbox"/>                         | <input type="checkbox"/>            | <input type="checkbox"/> |
| ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;                                                                                             | <input type="checkbox"/>             | <input checked="" type="checkbox"/>                         | <input type="checkbox"/>            | <input type="checkbox"/> |
| iii. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or                             | <input type="checkbox"/>             | <input checked="" type="checkbox"/>                         | <input type="checkbox"/>            | <input type="checkbox"/> |
| iv. Impede or redirect flood flows?                                                                                                                                                                                    | <input type="checkbox"/>             | <input checked="" type="checkbox"/>                         | <input type="checkbox"/>            | <input type="checkbox"/> |
| d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?                                                                                                                    | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?                                                                                                | <input type="checkbox"/>             | <input checked="" type="checkbox"/>                         | <input type="checkbox"/>            | <input type="checkbox"/> |

*a. Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?*

The proposed project is located in the City of Hanford and Kings County, which is within the jurisdiction of the Central Valley RWQCB.

Pollutants of concern during construction include eroded sediments, trash, petroleum products, concrete waste (dry and wet), sanitary waste, and other construction-related chemicals. Each of these pollutants on its own or in combination with other pollutants can have a detrimental effect on water quality. During construction activities, excavated soil would be exposed, and there would be an increased potential for soil erosion and sedimentation compared to existing conditions. In addition, there is a potential for chemicals, petroleum products, other liquids (such as paints and solvents), and concrete-related waste to be spilled or leaked and transported via storm runoff into a stormwater drainage basin.

The project site is approximately 39.23-acres. Because construction of the proposed project would disturb greater than 1 acre of soil, the proposed project would be subject to the requirements of the NPDES Construction General Permit (CGP). To prevent significant water quality impacts during



ground-disturbance activities, the proposed project would need to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) that includes construction BMPs that comply with the requirements of the CGP. These requirements are included in Mitigation Measure HYDRO-1.

**Mitigation Measure HYDRO-1** To minimize any potential short-term water quality effects from project-related construction activities, the project contractor shall implement Best Management Practices (BMPs) in conformance with the California Storm Water Best Management Practice Handbook for Construction Activity. In addition, the proposed project shall be in compliance with existing regulatory requirements, including the Water Pollution Control Preparation (WPCP) Manual. In addition, implementation of a Storm Water Pollution Prevention Plan (SWPPP) would be required under the National Pollutant Discharge Elimination System (NPDES) to regulate water quality associated with construction activities.

During operation of the proposed project, expected pollutants of concern include chemicals, liquid products, petroleum products (such as paints, solvents, and fuels), and waste that may be spilled or leaked and have the potential to be transported via runoff during periods of heavy precipitation. The proposed project would increase impervious surface area, which would increase the volume of runoff during a storm and more effectively transport pollutants to receiving waters. In addition, an increase in impervious surface area would increase the total amount of pollutants in the storm water runoff, which would increase the amount of pollutants discharged to downstream receiving waters. In order to avoid impacts to water quality during project operation, the proposed project would need to prepare and implement a Storm Water Management Plan (SWMP) to reduce the discharge of pollutants of concern to the maximum extent practicable.

**Mitigation Measure HYDRO-2** To reduce the potential for degradation of surface water quality during project operation, a Storm Water Management Plan (SWMP) shall be prepared for the proposed project. The SWMP shall describe specific programs to minimize storm water pollution resulting from the proposed project. Specifically, the SWMP shall identify and describe source control measures, treatment controls, and BMP maintenance requirements to ensure that the project complies with post-construction storm water management requirements of the Regional Water Quality Control Board (RWQCB).

With implementation of Mitigation Measure HYDRO-1 and Mitigation Measure HYDRO-2, the proposed project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality. Therefore, the project's impacts would be less than significant with mitigation incorporated.

*b. Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?*

Groundwater was not encountered up to a depth of 45 feet below ground surface (bgs) during geotechnical borings on the project site.<sup>31</sup> Therefore, due to the depth to the groundwater table and the depth of excavation, dewatering of the groundwater table would not be required. Although excavation would occur well above existing groundwater levels, perched groundwater could be present beneath the project site. As such, groundwater dewatering of perched groundwater may be required during construction. Groundwater dewatering would not substantially affect groundwater supplies or recharge because groundwater dewatering would be temporary, would cease after project construction, and would only affect perched groundwater. Therefore, construction impacts related to depletion of groundwater supplies or interference with groundwater recharge would be less than significant, and no mitigation would be required.

Currently, the project site is vacant and undeveloped. Development of the proposed project would increase impervious surfaces on the project site, which would decrease on-site infiltration. However, due to the depth to groundwater, it is unlikely that groundwater recharge from stormwater infiltration currently occurs on the project site. Regardless, any decrease in infiltration would be minimal in comparison to the size of the watershed and the amount of existing impervious surface area in the vicinity of the project area. Furthermore, project operation would not include groundwater extraction. Therefore, the proposed project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin, and impacts would be less than significant.

*c. Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:*

*i. Result in substantial erosion or siltation on- or off-site;*

During construction activities, soil would be exposed and disturbed, drainage patterns would be temporarily altered during grading and other construction activities, and there would be an increased potential for soil erosion and siltation compared to existing conditions. Additionally, during a storm event, soil erosion and siltation could occur at an accelerated rate. As discussed above in Response 4.10.a, Mitigation Measure HYDRO-1 requires compliance with applicable permits and preparation of a SWPPP to identify construction BMPs to be implemented as part of the proposed project to reduce impacts to water quality during construction, including those impacts associated with soil erosion and siltation. Compliance with applicable permit requirements and implementation of the construction BMPs would ensure that construction impacts related to on- or off-site erosion or siltation would be reduced to less than significant with mitigation incorporated.

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<sup>31</sup> Kleinfelder. 2020, op. cit.

Once operational, implementation of the proposed project would result in new internal access roads and surface parking lots, increasing impervious surface area which is not prone to erosion or siltation. The project would also include landscaping that would minimize erosion and siltation. The project site would be designed for storm water to be captured by the storm drain system, which would be collected by an underground conveyance system and delivered to the onsite bio infiltration basin. The basin would be privately held by the owners and would collect both the proposed project and the City right of way. All storm drain facilities would be designed to City standards. The proposed project would also convert the Peoples Ditch to a 66-inch-diameter below-ground pipeline where the ditch currently exists. The depth of the below-ground pipeline would be between two and six feet. Therefore, on-site flooding, erosion, and siltation would not occur. This impact would be less than significant.

*ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;*

During construction activities, soil would be exposed and disturbed, drainage patterns would be temporarily altered during grading and other construction activities, and there would be an increased potential for flooding compared to existing conditions. Additionally, during a storm event, flooding could occur at an accelerated rate. As discussed above in Response 4.10.a, Mitigation Measure HYDRO-1 requires compliance with applicable permits and preparation of a SWPPP to identify construction BMPs to be implemented as part of the proposed project to manage and convey storm water during construction. Proper management of storm water during construction would reduce impacts associated with flooding. Therefore, impacts related to on- or off-site flooding would be less than significant with mitigation incorporated.

Once operational, the proposed project would increase impervious surface area on the site and could potentially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite. However, as discussed previously, the project site would be designed for storm water to be captured by the storm drain system, which would be collected by an underground conveyance system and delivered to the onsite bio infiltration basin. The basin would be privately held by the owners and would collect both the proposed project and the City right of way. All storm drain facilities would be designed to City standards. The proposed project would also convert the Peoples Ditch to a 66-inch-diameter below-ground pipeline where the ditch currently exists. Therefore, the proposed project would not substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site. As such, operational impacts related to on-site or off-site flooding would be less than significant.

*iii. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or*

As discussed above in Response 4.10.a, there is a potential for sediments, trash, petroleum products, concrete waste (dry and wet), sanitary waste, and chemicals to be spilled or leaked and transported via storm runoff into stormwater basins. Each of these pollutants on its own or in combination with other pollutants can have a detrimental effect on water quality. Drainage patterns would be temporarily altered during grading and other construction activities, and construction-related pollutants could be spilled, leaked, or transported via storm runoff into

adjacent drainages and stormwater basins. Mitigation Measure HYDRO-1 requires compliance with applicable permits and preparation of a SWPPP to identify construction BMPs to be implemented as part of the proposed project to manage and convey storm water during construction. Therefore, construction of the proposed project would not create or contribute runoff water that would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff. Impacts would be less than significant with mitigation incorporated.

In addition, as discussed above in Response 4.10.a, expected pollutants of concern during operation of the proposed project include chemicals, liquid products, petroleum products (such as paints, solvents, and fuels), and waste that may be spilled or leaked and have the potential to be transported via runoff during periods of heavy precipitation. The proposed project would increase impervious area, which would increase the volume of runoff during a storm and more effectively transport pollutants to receiving waters. In addition, an increase in impervious surface would increase the total amount of pollutants in the storm water runoff, which would increase the amount of pollutants discharged to downstream receiving waters.

As discussed previously, the project site would be designed for storm water to be captured by the storm drain system, which would be collected by an underground conveyance system and delivered to the onsite bio infiltration basin. The basin would be privately held by the owners and would collect both the proposed project and the City right of way. All storm drain facilities would be designed to City standards. The proposed project would also convert the Peoples Ditch to a 66-inch-diameter below-ground pipeline where the ditch currently exists. Therefore, operation of the proposed project would not create or contribute runoff water that would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff. Impacts would be less than significant.

*iv. Impede or redirect flood flows?*

Refer to Response 4.10.a.ii above. With implementation of Mitigation Measure HYDRO-1, implementation of the proposed project would not impede or redirect flood flows. This impact would be less than significant with mitigation incorporated.

*d. In flood hazard, tsunami, or seiche zones, would the project risk release of pollutants due to project inundation?*

Tsunamis are sea waves of unusual size that occur from significant earthquakes either under the ocean floor or adjacent to shorelines and can travel great distances to impact low-lying communities and developments. Considering that the Coast Range protects the site from the sea, the potential to be affected by a tsunami is nil. A seiche is a free or standing wave oscillation that occurs in a confined body of water, such as a reservoir or lake. Earthquake-generated ground waves, which have a period that matches the natural period of the lake or reservoir, may cause the water to oscillate, which can cause damage to shoreline improvements. The Kings County General Plan

indicates that earthquake-induced seiches are not considered a risk within the vicinity of the project site.<sup>32</sup>

According to the Kings County General Plan, two major dams could cause substantial flooding in Kings County in the event of a failure: Pine Flat and Terminus Dams. The project site is located within an area of potential flooding due to dam failure of Pine Flat Dam. However, the Kings County General Plan does not state the potential inundation depth in the event of failure of Pine Flat Dam. The project site is not located within potential flooding of the Terminus Dam.

According to the Federal Emergency Management Agency (FEMA), the majority of the project site lies within a Zone X flood designation (Map Number 06031C0185C, dated June 16, 2009). Areas within Flood Zone X are outside of the 500-year floodplain. According to FEMA, “the areas of minimal flood hazard, which are the areas outside the Special Flood Hazard Area (SFHA) and higher than the elevation of the 0.2-percent-annual-chance flood, are labeled Zone C or Zone X (unshaded)”. Therefore, the project site lies outside of the 100-year floodplain and the designated SFHA. Therefore, implementation of the proposed project would not place housing within a flood hazard area, and a less-than-significant impact would result related to flood hazards.

*e. Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?*

As discussed above in Response 4.10.a, during construction activities, excavated soil would be exposed with an increased potential to expose soils to wind and water erosion, which could result in temporary minimal increases in sediment load in nearby water bodies. Pollutants of concern during construction include sediments, trash, petroleum products, concrete waste (dry and wet), sanitary waste, and chemicals and have the potential to be transported via stormwater runoff into receiving waters. However, Mitigation Measure HYDRO-1 would ensure implementation of BMPs and would require implementation of a SWPPP to control stormwater runoff and discharge of pollutants.

In addition, as discussed above in Response 4.10.a, operation of the proposed project could result in surface water pollution associated with chemicals, liquid products, petroleum products (such as paints, solvents, and fuels), and waste that may be spilled or leaked and have the potential to be transported via runoff during periods of heavy precipitation. As required by Mitigation Measure HYDRO-2, the proposed project would implement a SWMP, which shall identify and describe source control measures, treatment controls, and BMP maintenance requirements to ensure that the project complies with post-construction storm water management requirements of the RWQCB.

For the reasons discussed above, with implementation of Mitigation Measures HYDRO-1 and HYDRO-2, the proposed project would not result in water quality impacts that would conflict with the RWQCB’s Water Quality Control Plan (Basin Plan). Therefore, impacts related to conflict with a water quality control plan would be less than significant.

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<sup>32</sup> Kleinfelder. 2020, op. cit.

#### 4.11 LAND USE AND PLANNING

|                                                                                                                                                                                        | Potentially<br>Significant<br>Impact | Less Than<br>Significant with<br>Mitigation<br>Incorporated | Less Than<br>Significant<br>Impact  | No<br>Impact             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------------------------|-------------------------------------|--------------------------|
| Would the project:                                                                                                                                                                     |                                      |                                                             |                                     |                          |
| a. Physically divide an established community?                                                                                                                                         | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect? | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

*a. Would the project physically divide an established community?*

The project site is located in an area with a mix of land uses, including residential, commercial, and medical uses. Adjacent parcels consist mostly of low-density residential and commercial uses, with several undeveloped lots located north of the project site. The project site is generally bound to the north by the San Joaquin Valley Railroad and existing mixed-use structures, including commercial, medical, retail, and some residential uses, to the east by commercial land uses, to the south by SR-198, and to the west by commercial land uses.

The proposed project is located within a generally urbanized area of the City. The project site is currently undeveloped; however, as identified above, it is bordered by low-density residential and commercial uses. The proposed project would develop the project site with a new mixed-use development on an infill site. Although other land uses are located within the vicinity of the project site, none of these uses would be encroached upon or divided by project development. In addition, the project would not disturb or alter access to any existing adjacent uses. Therefore, the proposed project would not physically divide an established community. This impact would be less than significant.

*b. Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?*

The main documents regulating land use on the project site include the City's General Plan and the Zoning Ordinance. The General Plan designation for the project site is currently Highway Commercial and the current zoning designation is C-H. The proposed project would develop a medical and mixed-use development and would construct 15 buildings consisting of medical outpatient clinic services, hotel and conference center, specialized education, retail, medical office, skilled nursing and assisted living, and multi-family residential uses. Medical uses, education uses, and multi-family are not consistent with the land uses allowed in the Highway Commercial designation. Therefore, a change in the General Plan and zoning designations are required.

The project would amend the General Plan to Service Commercial and High-Density Residential. In addition, the project would require a rezone to C-S and R-H with a PUD overlay that would allow uses allowed on the entire project site. This zoning designation and PUD would allow uses from both zones to be constructed anywhere on the project site.

**General Plan.** The City's General Plan is the fundamental policy document of the City of Hanford. Within the General Plan, the Land Use and Community Design Element is the principal document guiding land use and development within the City. It serves as a blueprint for development throughout the community and is the vehicle through which the community needs, desires, and aspirations are balanced.

As identified above, without a General Plan amendment, the proposed project is inconsistent with the policies of the General Plan as they pertain to the existing Highway Commercial designation. The proposed project would amend the General Plan to Service Commercial and High-Density Residential.

**Service Commercial.** The Service Commercial designation provides a broad range of commercial activities such as businesses which have both retail and service components along SR-198.

The proposed project would be consistent with applicable Land Use and Community Design Element policies:

- **Policy L51 Purpose of Service Commercial Land Use Designation:** Establish the Service Commercial land use designation to provide for establishments that engage in servicing equipment, materials, products and related sales and travel conveniences, but which do not require the manufacturing, assembly, packaging or processing of articles or merchandise for distribution.
- **Policy L52 Typical Uses in Service Commercial Land Use Designation:** Define the uses allowed in the Service Commercial land use designation to include a broad range of commercial activities such as businesses which have both retail and service components. Among these are uses such as vehicle sales and service; auto rental and equipment rental; motels; restaurants (including fast food); service stations; car washes; building material supply; warehousing; wholesale trade; contractors, suppliers, small equipment yards; and other similar uses.
- **Policy L53 Existing Service Commercial Designations:** Encourage existing service commercial centers to expand or adapt to market changes through reuse, rehabilitation, and infill development.
- **Policy L54 Design of the Service Commercial Land Use Designation:** Require that new development projects and major site reconfigurations in the Service Commercial land use designation provide site layouts, landscaping, and screening so that the site appears aesthetically pleasing from the public street.
- **Policy L55 Location and Size of Service Commercial Land Use Designation:** Locate Service Commercial land use designations along Highway 198 and where they can serve as a buffer land use, such as between residential areas and railroad corridors. Require new development projects to be a minimum of one acre.



The proposed medical outpatient clinic services, hotel and conference center, specialized education, retail, and medical office, land uses would be consistent with the allowable uses within the Service Commercial designation. The project site is located along SR-198, consistent with Policy L55.

**High-Density Residential.** The High-Density Residential designation allows a density range of 14 to 29 units per gross acre with an expected typical density of 16 units per gross acre.

The proposed project would be consistent with applicable Land Use and Community Design Element policies:

- **Policy L38 Purpose of the High Density Residential Land Use Designation:** Establish the High-Density Residential land use designation primarily for multi-family apartment and condominium development in proximity to arterial streets, commercial and recreation facilities, and employment centers.
- **Policy L39 Typical Uses in the High-Density Residential Land Use Designation:** Define the uses allowed in the High-Density Residential land use designation to include multi-family residential dwellings in apartment buildings complexes.
- **Policy L40 Design of the High-Density Residential Land Use Designation:** Develop and enforce design policies and/or ordinances for High-Density Residential developments that ensure high-quality constructions design, open space amenities, safety and security, overall compatibility with the rest of the neighborhood.
- **Policy L41 Location and Size of the High Density Residential Land Use Designation:** Locate High-Density Residential land use designations in close proximity to Arterial streets, commercial centers, recreational facilities, and employment centers.

The proposed multi-family residential, skilled nursing, and assisted living land uses would be consistent with the allowable uses within the High-Density Residential designation. In addition, project site is located in proximity to arterial streets (11th Avenue), commercial (planned on site), and employment centers (planned on site), consistent with Policy L41.

**Zoning Ordinance.** The current zoning designation for the project site is C-H; however, the project would require a rezone to C-S and R-H with a PUD overlay that would allow uses allowed on the entire project site. This zoning designation and PUD would allow uses from both zones to be constructed anywhere on the project site.

**Service Commercial (C-S).** The C-S zone allows for commercial uses that engage in servicing equipment, materials, products and related sales and travel conveniences, but which do not require the manufacturing, assembly, packaging or processing of articles or merchandise for distribution. The minimum site area must be 5,000 square feet, unless a smaller site is approved with a conditional use permit in accordance with Chapter 17.80. No structure shall be placed within a building setback area, as identified in Section 17.20.060 of the Municipal Code. The

minimum distance between any residential structures shall be 10 feet, except as provided by the building code.

The C-S zone does not require usable open space. Landscaping also must be provided in accordance with Section 17.52 of the Municipal Code. In addition, driveways, parking, signage, mechanical equipment, lighting, and coverings must be designed consistent with City standards. The proposed project would be required to comply with these standards.

**High-Density Residential (R-H).** The R-H zone allows for a density range of 14 to 29 units per gross acre with a minimum site area per dwelling unit of 1,500 square feet. The minimum site area per dwelling unit shall be 1,500 square feet. The maximum coverage of a lot shall be determined by the combined building setback area requirements, accessory structure limitations, open space requirements, and off-street parking. In addition, no structure shall be placed within a building setback area, as identified in Section 17.14.070 of the Municipal Code. The minimum distance between structures shall be 10 feet, except as provided by the building code, and the maximum structure height shall be 35 feet.

Lots with five or more dwelling units shall provide for a usable open space area equal to five percent of the lot area. Where multiple lots that together make up a single development site, the required open space may be combined into common open space areas that are accessible to all residents of the site. Landscaping also must be provided in accordance with Section 17.52 of the Municipal Code. In addition, driveways, parking, signage, mechanical equipment, lighting, and coverings must be designed consistent with City standards. The proposed project would be required to comply with these standards.

**Summary.** Although the proposed project would require a General Plan Amendment and a Zone Change, the proposed uses would be consistent with the proposed General Plan designations and zones. Therefore, the proposed project would be consistent with proposed General Plan and zoning designations and would not conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. This impact would be less than significant.

## 4.12 MINERAL RESOURCES

|                                                                                                                                                                       | Potentially<br>Significant<br>Impact | Less Than<br>Significant with<br>Mitigation<br>Incorporated | Less Than<br>Significant<br>Impact  | No<br>Impact                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------------------------|-------------------------------------|-------------------------------------|
| Would the project:                                                                                                                                                    |                                      |                                                             |                                     |                                     |
| a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?                                | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| b. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan? | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

*a. Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?*

The Surface Mining and Reclamation Act (SMARA) regulates surface mining in California. SMARA was adopted in 1975 to protect the State's need for a continuing supply of mineral resources and to protect the public and environmental health. SMARA requires that all cities incorporate mapped mineral resource designations approved by the State Mining and Geology Board into their General Plans.

The City's General Plan indicates that at this time there are no known significant deposits of minerals, and no active mines.<sup>33</sup> The only mineral commodities that have been found within the City are sand and gravel that could be used for road and building construction. The Monterey Shale lies beneath Kings County and contains both oil and natural gas deposits. However, the City's General Plan states there have been no efforts to date to attempt extraction of these resources within or near the City. Therefore, implementation of the proposed project is not expected to result in the loss of known mineral resources or recovery sites. Therefore, this impact would be less than significant.

*b. Would the project result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?*

The project site is not located within an area known to contain locally important mineral resources. No impacts related to the loss of availability of a locally important mineral resource recovery site as delineated on a local general plan, specific plan, or other land use plan would occur as a result of project implementation.

<sup>33</sup> Hanford, City of. 2017, op. cit.

### 4.13 NOISE

|                                                                                                                                                                                                                                                                                                         | Potentially<br>Significant<br>Impact | Less Than<br>Significant with<br>Mitigation<br>Incorporated | Less Than<br>Significant<br>Impact  | No<br>Impact             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------------------------|-------------------------------------|--------------------------|
| Would the project result in:                                                                                                                                                                                                                                                                            |                                      |                                                             |                                     |                          |
| a. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?                                                       | <input type="checkbox"/>             | <input checked="" type="checkbox"/>                         | <input type="checkbox"/>            | <input type="checkbox"/> |
| b. Generation of excessive groundborne vibration or groundborne noise levels?                                                                                                                                                                                                                           | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels? | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

This section is based on the Acoustical Analysis prepared for the proposed project.<sup>34</sup> The Acoustical Analysis is included as Appendix E.

Noise is usually defined as unwanted sound. Noise consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, or sleep. Several noise measurement scales exist that are used to describe noise in a particular location. A decibel (dB) is a unit of measurement that indicates the relative intensity of a sound. Sound levels in dB are calculated on a logarithmic basis. An increase of 10 dB represents a 10-fold increase in acoustic energy, while 20 dB is 100 times more intense, and 30 dB is 1,000 times more intense. Each 10 dB increase in sound level is perceived as approximately a doubling of loudness; and similarly, each 10 dB decrease in sound level is perceived as half as loud. Sound intensity is normally measured through the A-weighted sound level (dBA). This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. The A-weighted sound level is the basis for 24-hour sound measurements that better represent human sensitivity to sound at night.

As noise spreads from a source, it loses energy so that the farther away the noise receiver is from the noise source, the lower the perceived noise level would be. Geometric spreading causes the sound level to attenuate or be reduced, resulting in a 6 dB reduction in the noise level for each doubling of distance from a single point source of noise to the noise sensitive receptor of concern.

There are many ways to rate noise for various time periods, but an appropriate rating of ambient noise affecting humans also accounts for the annoying effects of sound. Equivalent continuous sound level ( $L_{eq}$ ) is the total sound energy of time varying noise over a sample period. However, the predominant rating scales for human communities in the State are the  $L_{eq}$ , the community noise equivalent level (CNEL), and the day-night average level ( $L_{dn}$ ) based on A-weighted decibels (dBA). CNEL is the time varying noise over a 24-hour period, with a 5 dBA weighting factor applied to the

<sup>34</sup> WJV Acoustics, Inc. 2021. *Acoustical Analysis Hanford Place Hanford, California WJVA Report No. 20-016*. May 12.

hourly  $L_{eq}$  for noises occurring from 7:00 p.m. to 10:00 p.m. (defined as relaxation hours) and 10 dBA weighting factor applied to noise occurring from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours).  $L_{dn}$  is similar to the CNEL scale, but without the adjustment for events occurring during the evening relaxation hours. CNEL and  $L_{dn}$  are within one dBA of each other and are normally exchangeable. The noise adjustments are added to the noise events occurring during the more sensitive hours.

A project would have a significant noise effect if it would substantially increase the ambient noise levels for adjoining areas or conflict with adopted environmental plans and goals of applicable regulatory agencies, including, as appropriate, the City of Hanford.

The City of Hanford Noise Element of the 2017 General Plan provides generalized Noise Goals and Policies for various noise sources and land uses, related to development within the City. However, the 2017 General Plan does not provide specific noise standards applicable to development projects. Therefore, City staff provided the noise level standards from the City's 2002 General Plan. The standards provided in the 2002 General Plan are the same as those provided in the Kings County General Plan and will be considered the applicable standards for this project.

The 2002 General Plan provided noise level compatibility standards for transportation and non-transportation (stationary) noise sources. Table 4.K provides the City of Hanford 2002 General Plan noise standards for transportation noise sources and Table 4.L provides the City of Hanford 2002 General Plan noise standards for non-transportation (stationary) noise sources.

**Table 4.K: Maximum Allowable Noise Exposure Transportation Noise Sources**

| Land Use                           | Outdoor Activity Areas <sup>1</sup><br>$L_{dn}$ /CNEL, dB | Interior Spaces    |                            |
|------------------------------------|-----------------------------------------------------------|--------------------|----------------------------|
|                                    |                                                           | $L_{dn}$ /CNEL, dB | $L_{eq}$ , dB <sup>2</sup> |
| Residential                        | 60 <sup>3</sup>                                           | 45                 | -                          |
| Transient Lodging                  | 60 <sup>3</sup>                                           | 45                 | -                          |
| Hospitals, Nursing Homes           | 60 <sup>3</sup>                                           | 45                 | -                          |
| Theaters, Auditoriums, Music Halls | -                                                         | -                  | 35                         |
| Churches, Meeting Halls            | 60 <sup>3</sup>                                           | -                  | 40                         |
| Office Buildings                   | -                                                         | -                  | 45                         |
| Schools, Libraries, Museums        | -                                                         | -                  | 45                         |
| Playgrounds, Neighborhoods Parks   | 70                                                        | -                  | -                          |

Source: WJV Acoustics, Inc. (2021).

Notes:

<sup>1</sup> Where the location of outdoor activity areas is unknown, the exterior noise-level standard shall be applied to the property line of the receiving land use.

<sup>2</sup> As determined for a typical worst case hour during periods of use.

<sup>3</sup> Where it is not possible to reduce noise in outdoor activity areas to 60 dB  $L_{dn}$ /CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB  $L_{dn}$ /CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

**Table 4.L: Noise-Level Performance Standards for New Projects Affected by or Including Non-Transportation (Stationary) Noise Sources**

| Category                                         | Noise-Level Descriptor | Exterior Noise Level Standard<br>(Applicable at Property Line) |           | Interior Noise Level Standard |           |
|--------------------------------------------------|------------------------|----------------------------------------------------------------|-----------|-------------------------------|-----------|
|                                                  |                        | Daytime                                                        | Nighttime | Daytime                       | Nighttime |
| Residential                                      | $L_{eq}$               | 50                                                             | 45        | 40                            | 35        |
|                                                  | $L_{max}$              | 70                                                             | 65        | 60                            | 35        |
| Transient Lodging<br>Hospitals,<br>Nursing Homes | $L_{eq}$               | -                                                              | -         | 40                            | 35        |
|                                                  | $L_{max}$              | -                                                              | -         | 60                            | 55        |
| Theaters,<br>Auditoriums,<br>Music Halls         | $L_{eq}$               | -                                                              | -         | 35                            | 35        |
| Churches,<br>Meeting Halls                       | $L_{eq}$               | -                                                              | -         | 40                            | 40        |
| Office Buildings                                 | $L_{eq}$               | -                                                              | -         | 45                            | -         |
| Schools, Libraries,<br>Museums                   | $L_{eq}$               | -                                                              | -         | 45                            | -         |
| Playgrounds,<br>Neighborhood<br>Parks            | $L_{eq}$               | 65                                                             | -         | -                             | -         |

Source: WJV Acoustics, Inc. (2021).

Notes:

Each of the noise levels specified above shall be lowered by 5 dB for simple tone noises, noises consisting primarily of speech or music, or recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).

Certain land uses are considered more sensitive to noise than others. Examples of these land uses include residential areas, educational facilities, hospitals, childcare facilities, and senior housing. The project site generally bound by SR-198 to the south, San Joaquin Valley Railroad to the north, an existing retail shopping center to the east, and a mini-storage facility and former amusement/water park located west of the project site. The closest sensitive receptors to the proposed project include the residential land uses located north of the project site (across the San Joaquin Valley Railroad line) and south of the project site (across SR-198).

To assess existing noise levels, noise monitoring was conducted to establish the existing ambient noise environment at the project site. Eight short-term (15-minute) and two long-term (24-hour) noise measurements were conducted at the project site on May 5, 2021, and May 6, 2021. Noise measurement data collected during the noise monitoring area summarized in Table 4.M. As shown in Table 4.M, the short-term noise measurements indicate that ambient noise in the project site vicinity ranges from approximately 51.8 dBA to 62.6 dBA  $L_{eq}$ . The measured  $L_{dn}$  value at site LT-1 for May 5th and May 6th was 68.8 dB  $L_{dn}$  and 68.9 dB  $L_{dn}$ , respectively. The measured  $L_{dn}$  value at site LT-2 for May 5th and May 6th was 67.6 dB  $L_{dn}$  and 64.9 dB  $L_{dn}$ , respectively. Vehicle traffic, aircraft, agricultural activities, voices, birds, barking dogs, and a rooster were reported as the primary noise sources.

**Table 4.M: Ambient Noise Monitoring Results (dBA)**

| Location Number | Location Description                                                                                                                                                        | Time                                        | L <sub>eq</sub> <sup>1</sup> | L <sub>max</sub> <sup>1</sup> |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|------------------------------|-------------------------------|
| LT-1            | Located within the central portion of the project site, approximately 300 feet from the centerline of SR-198.                                                               | Daytime Average<br>(7:00 a.m. – 10:00 p.m.) | 64.5/<br>65.0 <sup>3</sup>   | 81.0/<br>79.1 <sup>3</sup>    |
|                 |                                                                                                                                                                             | Night Average<br>(10:00 p.m. – 7:00 a.m.)   | 60.3/<br>60.5 <sup>3</sup>   | 76.2/<br>77.5 <sup>3</sup>    |
| LT-2            | Located near the northern portion of the project site, adjacent to the existing residential land uses, and approximately 50 feet from the San Joaquin Valley Railroad line. | Daytime Average<br>(7:00 a.m. – 10:00 p.m.) | 59.9/<br>58.0 <sup>3</sup>   | 80.8/<br>79.2 <sup>3</sup>    |
|                 |                                                                                                                                                                             | Night Average<br>(10:00 p.m. – 7:00 a.m.)   | 54.4/<br>51.7 <sup>3</sup>   | 70.8/<br>68.2 <sup>3</sup>    |
| ST-1            | Located near the northeast portion of the project site, in the vicinity of existing retail/commercial land uses adjacent to the project site.                               | 7:35 a.m.                                   | 51.8                         | 56.0                          |
|                 |                                                                                                                                                                             | 4:25 p.m.                                   | 53.7                         | 62.1                          |
| ST-2            | Located near the project site access point along Campus Drive.                                                                                                              | 8:05 a.m.                                   | 62.6                         | 76.3                          |
|                 |                                                                                                                                                                             | 4:45 p.m.                                   | 56.7                         | 62.3                          |
| ST-3            | Located near the northwestern portion of the project site, in the parking lot of Adventist Health Hospital.                                                                 | 8:30 a.m.                                   | 51.9                         | 70.1                          |
|                 |                                                                                                                                                                             | 5:10 p.m.                                   | 52.1                         | 66.6                          |
| ST-4            | Located at the intersection of Campus Drive and 7th Street, north of the project site.                                                                                      | 8:50 a.m.                                   | 60.3                         | 77.0                          |
|                 |                                                                                                                                                                             | 5:30 p.m.                                   | 61.4                         | 74.2                          |

Source: WJV Acoustics, Inc. (2021)

Notes:

<sup>1</sup> L<sub>eq</sub> represents the average of the sound energy occurring over the measurement time period for the short-term noise measurements.

<sup>2</sup> L<sub>max</sub> is the highest sound level measured during the measurement time period.

<sup>3</sup> May 5, 2021 data/May 6, 2021 data

*a. Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*

The following section describes how the short-term construction and long-term operational noise impacts of the proposed project would be less than significant with mitigation.

**Traffic Noise Impacts to Off-Site Noise-Sensitive Land Uses.** The Federal Highway Administration (FHWA) Traffic Noise Model was used to quantify expected project-related increases in traffic noise exposure along roadways in the project vicinity based on ADT.

Project-related significant impacts would occur if an increase in traffic noise associated with the project would result in noise levels exceeding the City's applicable noise level standards at the location(s) of sensitive receptors. For the purpose of this analysis a significant impact was also assumed to occur if traffic noise levels were to increase by 3 dB at sensitive receptor locations where noise levels already exceed the City's applicable noise level standards (without the project), as 3 dB generally represents the threshold of perception in change for the human ear.

The City's exterior noise level standard for residential land uses is 60 dB L<sub>dn</sub> (an exterior noise exposure of up to 65 dB L<sub>dn</sub> is allowed in instances where it is not possible to reduce noise exposure in outdoor activity areas to 60 L<sub>dn</sub> or less using a practical application of available noise reduction measures.). Traffic noise was modeled at seven receptor locations. The seven modeled receptors are



located at roadway setback distances representative of the sensitive receptors (residences) along each analyzed roadway segment. The receptor locations are described below:

- R-1: Residential land use located approximately 90 feet from the centerline of Lacey Boulevard.
- R-2: Residential land use located approximately 60 feet from the centerline of 7th Street.
- R-3: Residential land use located approximately 95 feet from the centerline of 7th Street.
- R-4: Residential land use located approximately 60 feet from the centerline of 6th Street.
- R-5: Residential land use located approximately 100 feet from the centerline of Campus Drive.
- R-6: Residential land use located approximately 95 feet from the centerline of 7th Street.
- R-7: Residential land use located approximately 90 feet from the centerline of 6th Street.

Traffic volumes for Existing and Cumulative Year 2042 Conditions without and with project traffic noise levels at these receptor locations are shown in Table 4.N. These noise levels represent the worst-case scenario, which assumes that no shielding is provided between traffic and the location where the noise contours are drawn.

**Table 4.N: Project Contribution to Traffic Noise (dB L<sub>dn</sub>)**

| Modeled Receptor | Existing Conditions |              |                      | Cumulative Conditions |              |                      |
|------------------|---------------------|--------------|----------------------|-----------------------|--------------|----------------------|
|                  | Without Project     | Plus Project | Project Contribution | Without Project       | Plus Project | Project Contribution |
| R-1              | 63                  | 63           | 0                    | 64                    | 64           | 0                    |
| R-2              | 62                  | 62           | 0                    | 64                    | 64           | 0                    |
| R-3              | 58                  | 59           | +1                   | 60                    | 60           | 0                    |
| R-4              | 55                  | 58           | +3                   | 56                    | 59           | +3                   |
| R-5              | 51                  | 51           | 0                    | 53                    | 53           | 0                    |
| R-6              | 59                  | 59           | 0                    | 61                    | 61           | 0                    |
| R-7              | 52                  | 52           | 0                    | 54                    | 54           | 0                    |

Source: WJV Acoustics, Inc. (2020).

Note: As discussed in Section 4.17, Transportation, approximately 41,500 square feet of commercial/office uses is proposed. These uses would generate fewer trips than the 114,000 square feet of commercial/office uses that is analyzed in the TIS/proposed project trip generation estimate. Thus, the traffic noise analysis evaluates a project with higher trip generation potential. Therefore, this analysis can be considered conservative.

As shown in Table 4.N, project-related traffic would not result in noise levels at any sensitive receptors to exceed the City's noise level standard, nor result in an increase of more than 3 dB in any sensitive receptor locations where noise levels already exceed the City's noise level standard without the implementation of the project. In addition, the project's contribution to Cumulative 2042 traffic noise exposure levels at the modeled representative receptor locations would not result in noise levels to exceed the City's noise level standard, nor result in an increase of more than 3 dB in any sensitive receptor locations where noise levels already exceed the City's noise level standard without the implementation of the project. Therefore, project-related traffic noise impacts to off-site noise-sensitive land uses would be less than significant. No mitigation is required.

**Stationary Source Noise Impacts.** The proposed project would include a variety of medical buildings, hotel and conference center, medical instruction facilities, retail/drive-thru buildings, commercial buildings and a multi-family apartment building. A wide variety of noise sources can be associated

with these land use designations. The noise levels produced by such sources can also be highly variable and could potentially impact existing off-site and proposed on-site sensitive receptors. Typical examples of stationary noise sources associated with such land uses include: heating ventilation, and air conditioning (HVAC) and mechanical equipment; truck deliveries; parking lot activities; and drive-thru operations. These noise sources are evaluated below.

***Mechanical Equipment.*** It is assumed that the project would include roof-mounted HVAC units on the proposed buildings. The HVAC requirements for the buildings would likely require the use of multiple packaged roof-top units. For the purpose of noise and aesthetics, roof-mounted HVAC units are typically shielded by means of a roof parapet. Based on reference noise level measurements at numerous commercial and retail buildings with roof-mounted HVAC units, associated noise levels typically range between approximately 45-50 dBA  $L_{max}$  at a distance of 50 feet from the building façade.

For this project, the closest residential property lines to any potential roof-mounted HVAC equipment would be located at a minimum setback distance of 200 feet. Taking into account the standard rate of noise attenuation with increased distance from a point source (a reduction of 6 dB per doubling of distance), noise levels associated with the operation of roof-mounted HVAC units would be approximately 33-38 dBA  $L_{max}$  at the closest sensitive receptor property line. These noise levels would not exceed any City of Hanford noise level standard or exceed existing (without project) ambient noise levels. Therefore, potential impacts related to mechanical equipment noise would be less than significant and no mitigation is required.

***Truck Movements.*** At the time of this analysis, a specific truck access route (or routes) had not been designated. However, trucks would access the project site by one of three access points, Glendale Avenue from the west, Campus Drive from the north or 5th Street from the east. It is assumed that truck deliveries would occur at various times and locations throughout the overall project area. Precise details on truck deliveries were not known at the time of this analysis.

Based on reference measurements of the noise levels produced by slowly moving trucks, truck movements would be expected to produce noise levels in the range of 65 to 71 dBA  $L_{max}$  at a distance of 100 feet. The range in measured truck noise levels is due to differences in the size of trucks, their speed of movement and whether they have refrigeration units in operation during the pass-by.

If truck movements were to access the project site via the 5th Street access point, truck movements could occur as close as approximately 130 feet from the closest residential property lines to the north. At this distance, noise levels associated with truck movements would produce maximum noise levels in the range of approximately 63 to 69 dBA  $L_{max}$ , which would not exceed the City's daytime (7:00 a.m. to 10:00 p.m.) noise level standard of 70 dBA  $L_{max}$ , but would have the potential to exceed the City's nighttime (10:00 p.m. to 7:00 a.m.) noise level standard of 65 dBA  $L_{max}$ . Based on the existing ambient noise levels in the vicinity of the future 5th Street access point (noise monitoring site LT-2), the City's nighttime 65 dBA  $L_{max}$  standard was exceeded during twelve of the 18 nighttime hours measured over the two-day monitoring period. However, implementation of Mitigation Measure NOI-1 would reduce potential impacts

related to truck movement noise by requiring truck movements to use the Glendale access point only during nighttime hours.

**Mitigation Measure NOI-1      Truck Movements.** All truck movements occurring during nighttime hours of 10:00 p.m. to 7:00 a.m. shall be required to use the Glendale Avenue access point only.

With implementation of Mitigation Measure NOI-1, impacts associated with truck movement noise would be reduced to a less-than-significant level.

**Parking Lot Activities.** Noise due to traffic in parking lots is typically limited by low speeds and is not usually considered to be significant. Human activity in parking lots that can produce noise includes voices, stereo systems and the opening and closing of car doors and trunk lids. Such activities can occur at any time. The noise levels associated with these activities cannot be precisely defined due to variables such as the number of parking movements, time of day and other factors. It is typical for a passing car in a parking lot to produce a maximum noise level of 60 to 65 dBA at a distance of 50 feet, which is comparable to the level of a raised voice.

For this project, parking would be dispersed throughout the overall project area. The closest proposed parking areas would be located at least 150 feet from the closest existing residential property lines to the north. At this distance, maximum parking lot vehicle movements would be expected to be approximately 51 to 56 dBA  $L_{max}$ , which would not exceed any of the City's applicable noise levels standards or exceed existing ambient noise levels at the closest residential land uses. Due to existing elevated ambient noise levels at the closest sensitive receptor locations (residential land uses north of the project site), noise levels associated with parking lot activities would generally not be audible over existing (without project) noise levels. Therefore, potential impacts related to parking lot activity noise would be less than significant and no mitigation is required.

**Drive-Thru Retail.** The proposed project would include two retail areas that would likely include drive-thru operations. While the exact tenants and type of retail store was not known at this time, it is assumed that amplified speech would be incorporated into drive-thru operations.

In order to assess potential project noise levels associated with drive-thru operations, reference noise levels were used from previous noise measurements at a drive-thru restaurant. Based on the previous noise measurements, the microphone used by customers to order food and the loudspeaker used by employees to confirm orders are both integrated into a menu board that is located a few feet from the drive-thru lane at the approximate height of a typical car window. Vehicles would enter the drive-thru lane from the west and then turn to the north along the east side of the restaurant.

Reference noise measurements were obtained at a distance of approximately 40 feet from the menu board containing the microphone/loudspeaker system at an angle of about 45° toward the rear of the vehicle being served. This provided a worst-case exposure to sound from the loudspeaker system since the vehicle was not located directly between the loudspeaker and measurement location. Cars were lined up in the access lane during the noise measurement period indicating that the drive-through lane was operating at or near a peak level of activity.

Each ordering cycle was observed to take approximately 60 seconds including vehicle movements. A typical ordering cycle included 5-10 seconds of loudspeaker use with typical maximum noise levels in the range of 60-62 dBA  $L_{max}$  at the 40 foot-reference location. Vehicles moving through the drive-thru lane produced noise levels in the range of 55-60 dBA  $L_{max}$  at the same distance. Vehicles parked at the ordering position (between the menu board and measurement site) were observed to provide significant acoustic shielding during the ordering sequence. The effects of such shielding are reflected by the noise measurement data. Noise levels were measured to approximately 60 dB  $L_{eq}$  at the measurement site, and included noise from all sources, including the loudspeaker, vehicle movements and HVAC equipment.

The closest noise-sensitive receptors (residential land uses) to the proposed retail drive-thru operations are located approximately 190 feet to the north. At this setback distance, noise levels associated with drive-thru retail operations would be expected to produce noise levels of approximately 47-49 dB  $L_{max}$  and approximately 46 dB  $L_{eq}$ . Potential project-related noise exposure at the locations of the closest residential land uses was calculated based upon the above-described reference noise measurement data, the existing sound walls, and the normal rate of sound attenuation over distance for a "point" noise source (6 dB/doubling of distance).

It is unknown if nighttime operations would occur at the drive-thru retail locations. The noise level of 46 dB  $L_{eq}$  at the closest residential property line assumes the drive-thru would be in constant operation and should therefore be considered a worst-case assessment of drive-thru noise levels. While drive-thru operational noise levels (46 dB  $L_{eq}$ ) slightly exceed the City's nighttime noise level standard of 45 dB  $L_{eq}$ , such levels are below existing (without project) nighttime ambient noise levels at the residential property lines and would therefore not be considered a significant impact. Therefore, potential impacts related to drive-thru noise would be less than significant, and no mitigation is required.

**Construction Noise Impacts.** Construction noise would occur at various locations within the project site through the buildout period and at locations where off-site infrastructure improvements may be required. Existing sensitive receptors could be located as close as 150 feet from construction activities. Table 4.O provides typical construction-related noise levels at distances of 100 feet, 200 feet, and 300 feet.

Construction noise is not considered to be a significant impact if construction is limited to the allowed hours and construction equipment is adequately maintained and muffled. The City of Hanford limits hours of construction to occur only between the hours of 7:00 a.m. to 8:00 p.m. Construction noise impacts could result in annoyance or sleep disruption for nearby residents if nighttime operations were to occur or if equipment is not properly muffled or maintained.

**Table 4.O: Typical Construction Equipment Maximum Noise Levels (dBA)**

| Type of Equipment   | 100 Feet | 200 Feet | 300 Feet |
|---------------------|----------|----------|----------|
| Concrete Saw        | 84       | 78       | 74       |
| Crane               | 75       | 69       | 65       |
| Excavator           | 75       | 69       | 65       |
| Front End Loader    | 73       | 67       | 63       |
| Jackhammer          | 83       | 77       | 73       |
| Paver               | 71       | 65       | 61       |
| Pneumatic Tools     | 79       | 73       | 69       |
| Dozer               | 76       | 70       | 66       |
| Rollers             | 74       | 68       | 64       |
| Trucks              | 82       | 72       | 70       |
| Pumps               | 74       | 68       | 64       |
| Scrapers            | 81       | 75       | 71       |
| Portable Generators | 74       | 68       | 64       |
| Backhoe             | 80       | 74       | 70       |
| Grader              | 80       | 74       | 70       |

Source: Noise Control for Buildings and Manufacturing Plants, Bolt, Beranek & Newman (1987).

Noise levels associated with construction activities would be reduced by incorporating noise mitigation measures and appropriate best management practices. The following mitigation measures and best management practices should be applied during periods of project construction.

#### **Mitigation Measure NOI-2**

The project contractor shall implement the following measures during construction of the project:

- Per the City of Hanford Municipal Code, construction activities should not occur outside the hours of 7:00 a.m. to 8:00 p.m.
- All construction equipment shall be properly maintained and muffled as to minimize noise generation at the source.
- Noise-producing equipment shall not be operating, running, or idling while not in immediate use by a construction contractor.
- All noise-producing construction equipment shall be located and operated, to the extent possible, at the greatest possible distance from any noise-sensitive land uses.
- Locate construction staging areas, to the extent possible, at the greatest possible distances from any noise-sensitive land uses.
- Signs shall be posted at the construction site and near adjacent sensitive receptors displaying hours of construction activities and providing the contact phone number of a designated noise disturbance coordinator.

Implementation of Mitigation Measure NOI-2 would limit construction hours and require the construction contractor to implement noise reducing measures during construction, which would reduce short-term construction noise impacts to a less-than-significant level.

**Noise Impacts to Proposed On-Site Sensitive Receptors.** The proposed project would include sensitive receptors (residential land uses, transient lodging, nursing homes, offices, etc.) that could be impacted by exterior and interior noise exposure associated with existing transportation noise sources (SR-198 and San Joaquin Valley Railroad line). The applicable exterior and interior noise level standards for such land uses are provided above as Table 4.K.

**Exterior Noise Exposure.** Exterior noise exposure within the project site is dominated by vehicle traffic associated with SR-198 to the south and railroad operations associated with the San Joaquin Valley Railroad line to the north. Noise levels measured at ambient noise monitoring sites LT-1 and LT-2 indicate that overall project site noise exposure is approximately 65-70 dB  $L_{dn}$ .

The exterior noise level standard applicable to the above-described sensitive receptors is 60 dB  $L_{dn}$ . The General Plan also states that where it is not possible to reduce noise in outdoor activity areas to 60 dB  $L_{dn}$ /CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB  $L_{dn}$ /CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance.

Exterior noise level compatibility standards for transportation noise sources are applied at the outdoor activity areas of sensitive receptors. Outdoor activity areas typically include backyards of single-family residential uses and outdoor common use areas (pools, BBQ/picnic areas, playgrounds, etc.) as well as individual patios, balconies and decks of multi-family residential uses and transient lodging land uses. The exact locations of such outdoor activity areas were not known at the time of this analysis; however, the project site plan (Figure 3) provides preliminary locations of pool areas for both the apartment development and the hotel development. Other proposed sensitive receptors (memory care facility, assisted living facility, skilled nursing facility, etc.) may also include outdoor activity areas, at which this exterior noise level standard would apply.

Based upon project site noise exposure (approximately 65-70 dB  $L_{dn}$ ) and the preliminary locations of the apartment and hotel pool areas (outdoor activity areas), mitigating exterior noise levels at these locations to at or below 60 dB  $L_{dn}$  would likely not be feasible. However, a preliminary analysis using a sound wall insertion loss model indicates that a sound wall constructed to a minimum height of 6.5 feet above ground level constructed around the two pool areas (apartment and hotel land uses) would mitigate exterior noise levels to below 65 dB  $L_{dn}$  within these outdoor activity areas.

Other proposed sensitive receptors (memory care facility, assisted living facility, skilled nursing facility, etc.) may also include outdoor activity areas, at which this exterior noise level standard would apply. The potential locations of outdoor activity areas associated with these land uses was not known at the time of this analysis. However, a similarly constructed sound wall around

such uses would reduce noise levels to below 65 dB  $L_{dn}$ . Such noise levels are allowed by the City.

Therefore, since transportation noise exposure levels are expected to exceed the City's 60 dB  $L_{dn}$  exterior noise level standard at outdoor activity areas associated with the multi-family apartment land use and the hotel land use, implementation of Mitigation Measure NOI-3 would be required.

**Mitigation Measure NOI-3**

**Exterior Noise Levels.** The final design shall include a minimum 6.5-foot above-ground level sound wall around outdoor activity areas associated with the proposed hotel and apartment land uses to mitigate exterior noise levels to below 65 dB  $L_{dn}$  within these outdoor activity areas.

**Interior Noise Exposure.** As described above, exterior project site noise exposure throughout the overall project area is approximately 65-70 dB  $L_{dn}$ , as a result of varying levels of proximity to both SR-198 and the San Joaquin Valley Railroad line. Additionally, peak hour exterior noise levels would be approximately 70 dB  $L_{eq}$  at the exterior of the office land uses to the north and the nursing college to the south. Interior noise level standards applicable to the project site vary, based upon proposed land uses. These interior noise level standards applicable to the project are:

- 45 dB  $L_{dn}$ : Multi-family apartment, hotel, skilled nursing facility, memory care facility, assisted living facility, and any additional facility where people are residing and sleep disturbance is considered.
- 45 dB  $L_{eq}$ : Office buildings, nursing college (as determined for a typical worst-case hour during periods of use).
- Based upon the above-described exterior noise exposure levels and applicable interior noise level standards, the proposed construction measures must be capable of providing approximately 25 dB of outdoor-to-indoor noise level reduction (NLR) ( $70-45=25$ ).

Generally speaking, construction measures complying with current building code standards would typically be expected to provide approximately 20-25 dB of outdoor-to-indoor NLR, provided windows and doors can remain closed for sound insulation purposes. However, additional sound attenuation measures may be required in conditions where the exterior façade consists of large portions of window or storefront glazing assemblies. Once construction plans are developed, an acoustical consultant should review to determine if additional interior noise level mitigation measures may be required.

**Mitigation Measure NOI-4**

**Interior Noise Levels.** Once building-specific construction plans become available, interior noise levels should be reviewed and calculated by a qualified acoustical consultant to determine if additional noise attenuation mitigation measures are required to comply with interior noise level standards.



Implementation of Mitigation Measures NOI-3 and NOI-4 would reduce exterior and interior noise levels at future sensitive receptors and would reduce potential impacts to a less-than-significant level.

*b. Would the project result in generation of excessive groundborne vibration or groundborne noise levels?*

The dominant sources of man-made vibration are sonic booms, blasting, pile driving, pavement breaking, demolition, diesel locomotives, and rail-car coupling. None of these activities are anticipated to occur with construction or operation of the proposed project. Vibration from construction activities could be detected at the closest sensitive land uses, especially during movements by heavy equipment or loaded trucks and during some paving activities (if they were to occur).

Construction of the proposed project could result in the generation of groundborne vibration. This construction vibration impact analysis assesses the potential for building damages using vibration levels in peak particle velocity (PPV) (in/sec). Typical vibration levels at distances of 100 feet and 300 feet are summarized by Table 4.P. The closest existing sensitive receptors are located approximately 150 feet from construction activity. At this distance, vibration levels would not be expected to exceed any significant threshold levels for annoyance or damage. Therefore, construction-related vibration impacts would be less than significant, and no mitigation is required.

**Table 4.P: Typical Vibration Levels During Construction**

| Equipment         | PPV (in/sec) |          |
|-------------------|--------------|----------|
|                   | 100 feet     | 300 feet |
| Bulldozer (large) | 0.0110       | 0.00600  |
| Bulldozer (small) | 0.0004       | 0.00019  |
| Loaded Truck      | 0.0100       | 0.00500  |
| Jackhammer        | 0.0050       | 0.00200  |
| Vibratory Roller  | 0.0300       | 0.01300  |
| Caisson Drilling  | 0.0100       | 0.00600  |

Source: WJV Acoustics, Inc. (2021).

Once operational, it is not expected that ongoing operational activities would result in any vibration impacts at nearby sensitive uses. Activities involved in trash bin collection could result in minor on-site vibrations as the bin is placed back onto the ground. Such vibrations would not be expected to be felt at the closest off-site sensitive uses. As such, operational vibration impacts would be less than significant, and no mitigation is required.

*c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?*

The closest airport to the project site is the Hanford Municipal Airport, located approximately 1.5 miles southeast of the project site. Aircraft noise is occasionally audible at the project site; however,

no portion of the project site lies within the 60 dBA CNEL noise contours of any public airport. Therefore, the proposed project would not result in the exposure of people residing or working in the project area to excessive noise levels. This impact would be less than significant, and no mitigation is required.

#### 4.14 POPULATION AND HOUSING

|                                                                                                                                                                                                                     | Potentially<br>Significant<br>Impact | Less Than<br>Significant with<br>Mitigation<br>Incorporated | Less Than<br>Significant<br>Impact  | No<br>Impact                        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------------------------|-------------------------------------|-------------------------------------|
| Would the project:                                                                                                                                                                                                  |                                      |                                                             |                                     |                                     |
| a. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?                                                                                     | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

- a. *Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?*

The proposed project would include medical outpatient clinic services, a hotel and conference center, specialized education, retail, medical office, memory care, skilled nursing, and assisted living uses, and multi-family residential uses. The project site does not currently contain any permanent residents in the existing condition. As such, implementation of the proposed project would potentially result in an increase in residents of the City. The proposed project would result in the development of 90 multi-family residential apartment units, which would result in approximately 280 additional residents based on the estimated 3.11 persons per household<sup>35</sup> in Hanford. The skilled nursing, and assisted living uses are not a typical residential use and would likely attract existing residents that already live in the City and surrounding areas rather than inducing new population growth from outside the area. Nevertheless, this analysis assumes the facility would house one resident per unit. Therefore, these facilities would house 139 residents. Therefore, the proposed project would add up to 419 new residents on the project site. The addition of 419 new residents represents 0.7 percent of Hanford's 2021 population of 58,496.<sup>36</sup>

During project operation, the proposed project would also generate new employment. According to the most recently data published by the U.S. Census Bureau, the City of Hanford had approximately 58.8 percent of the population within the civilian labor force (approximately 34,396 individuals employed).<sup>37</sup> Therefore, because the region's existing labor force already includes a large number of people employed, it is reasonable to assume that the proposed project's employees would most likely be comprised of individuals who already live in the general area. As such, it is unlikely that these employment opportunities would cause employees to relocate their residences to be close to

<sup>35</sup> Kings County and Cities of Avenal, Corcoran, Hanford and Lemoore. 2016. *2016-2024 Housing Element*. January. Website: [https://cms6.revize.com/revize/hanfordca/document\\_center/Planning/Plans/Housing%20Element%20approved%20by%20HCD\\_2016-03-31%20final.pdf](https://cms6.revize.com/revize/hanfordca/document_center/Planning/Plans/Housing%20Element%20approved%20by%20HCD_2016-03-31%20final.pdf) (accessed March 2023).

<sup>36</sup> U.S. Census Bureau. 2022. QuickFacts Hanford City, California. Website: [census.gov/quickfacts/hanfordcitycalifornia](https://census.gov/quickfacts/hanfordcitycalifornia) (accessed March 2023).

<sup>37</sup> Ibid.

the project site, thereby inducing growth within the City. Population growth in the area as a result of on-site employment opportunities would be negligible.

All utilities infrastructure, including sewer and water facilities and storm drains, exists in the immediate vicinity of the project site and would be extended to the project site. These existing utility and service systems have adequate capacity to serve the proposed project (refer to Section 4.19, below). Therefore, the proposed project would not result in significant population growth as a result of project implementation. Impacts would be less than significant.

*b. Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?*

No housing is currently present on the project site, and therefore, there are no people living on the project site that would be displaced by the proposed project. Conversely, the project would result in the development of medical outpatient clinic services, a hotel and conference center, specialized education, retail, medical office, skilled and nursing and assisted living uses, and multi-family residential uses. Therefore, there would be no impacts related to the displacement of substantial numbers of people or housing units, and no mitigation is required.

## 4.15 PUBLIC SERVICES

|                                                                                                                                                                                                                                                                                                                                                                                                           | Potentially<br>Significant<br>Impact | Less Than<br>Significant with<br>Mitigation<br>Incorporated | Less Than<br>Significant<br>Impact  | No<br>Impact             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------------------------|-------------------------------------|--------------------------|
| Would the project:                                                                                                                                                                                                                                                                                                                                                                                        |                                      |                                                             |                                     |                          |
| a. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services: |                                      |                                                             |                                     |                          |
| i. Fire protection?                                                                                                                                                                                                                                                                                                                                                                                       | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| ii. Police protection?                                                                                                                                                                                                                                                                                                                                                                                    | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| iii. Schools?                                                                                                                                                                                                                                                                                                                                                                                             | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| iv. Parks?                                                                                                                                                                                                                                                                                                                                                                                                | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| v. Other public facilities?                                                                                                                                                                                                                                                                                                                                                                               | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

- a. *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:*

i. *Fire protection?*

Fire suppression, emergency medical and rescue services, and other life safety services are provided to the project area and the site by the Fire Department. There are three fire stations within the City, with the closest to the project site being Fire Station 3 at 1070 S. 12th Street, Hanford, approximately 1.5 miles south of the project site.

As noted above, the proposed project would result in an incremental increase in the population of the City and therefore incrementally increase the demand for emergency fire services and emergency medical services. However, the proposed project would be required to comply with all applicable codes for fire safety and emergency access. In addition, the Fire Department would also review the site plans and fire access plan for the proposed project to ensure that adequate emergency access is provided prior to issuance of a building permit.

The Fire Department would provide services to the project site and would not require additional firefighters to serve the proposed project. The construction of a new or expanded fire station would also not be required. The proposed project would not result in a significant impact on the physical environment due to the incremental increase in demand for fire protection and life safety services, and the potential increase in demand for service is not expected to adversely affect existing response times to the site or within the City. In addition, the project applicant would be required to pay development impact fees for fire facilities, which are charged to all new development to support the needs for fire protection. Therefore, with payment of

development impact fees, construction and operation of the proposed project would have a less-than-significant impact on fire protection and safety services and facilities.

*ii. Police protection?*

The City of Hanford Police Department (Police Department) provides police protection to the project area and project site. The Police Department is located at 425 N. Irwin Street, approximately 1.4 miles northeast of the project site. Development of the proposed project would increase the population on the project site and incrementally increase demand for emergency police services to the project site. However, the Police Department would continue to provide service to the project site and would not require additional officers to serve the project site. The construction of new or expanded police facilities would not be required. In addition, the project applicant would be required to pay development impact fees for police facilities, which are charged to all new development to support the needs for police protection. Therefore, with payment of development impact fees, the proposed project would not result in a substantial adverse impact associated with the provision of additional police facilities or services, and impacts to police services represent a less-than-significant impact.

*iii. Schools?*

There are six elementary school districts and one high school district within Hanford, including Hanford Joint Union High School District, Hanford Elementary School District, Pioneer Union Elementary School District, Kings River-Hardwick Union Elementary School District, Kit Carson Union Elementary School District, Lakeside Union Elementary School District, and Armona Union Elementary School District. There are also private schools that provide educational services.

The estimated number of students the proposed project would generate is derived by multiplying the number of students per dwelling unit (the student yield factor) by the number of dwelling units in the proposed project (90 new units). The California State Allocation Board Office of Public-School Instruction reports that the Statewide student yield factor of 0.7 student per dwelling unit is applicable for unified school districts. Applying the Statewide average student yield factor, the proposed project would generate 63 students.

Senate Bill 50 (SB 50), which revised the existing limitation on developer fees for school facilities, was enacted as urgency legislation which became effective on November 4, 1998, as a result of the California voters approving a bond measure (Proposition 1A). SB 50 established a 1998 base amount of allowable developer fees (Level One fee) for residential construction (subject to adjustment) and prohibits school districts, cities, and counties from imposing school impact mitigation fees or other requirements in excess or in addition to those provided in the statute.

The project sponsor would be required to pay Hanford Joint Union High School District school impact fees prior to issuance of a certificate of occupancy. The Hanford Joint Union High School District is responsible for implementing the specific methods for mitigating school impacts under the Government Code. These fees would be directed towards maintaining adequate service levels, which would ensure that any impact to schools that could result from the proposed

project would be offset by development fees, and in effect, reduce potential impacts to a less-than-significant level.

*iv. Parks?*

Development of the proposed project could increase the use of parks within the vicinity of the project site. However, this increase in use is not expected to adversely affect the physical conditions of local and regional open space areas or recreational facilities or require the provision of new parks or facilities. Specifically, the proposed project is anticipated to increase the City population by less than one percent. The proposed project would not result in a substantial increase in demand for park or recreation services in the vicinity, such that new facilities would be required to serve the project. In addition, the project applicant would be required to pay development impact fees for parks and recreation facilities. Therefore, with payment of development impact fees, the proposed project would have a less-than-significant impact related to the provision of park and recreational facilities.

*v. Other public facilities?*

Development of the proposed project could also increase demand for other public services, including libraries, community centers, and public health care facilities. However, due to the minimal increase in population, the proposed project would not result in a substantial increase the use of these facilities, such that new facilities would be needed to maintain service standards, as these facilities are not currently overused and have capacity to serve new demand. In addition, the project applicant would be required to pay development impact fees, which would ensure that impacts to other public facilities would be less than significant.



#### 4.16 RECREATION

|                                                                                                                                                                                                                | Potentially<br>Significant<br>Impact | Less Than<br>Significant with<br>Mitigation<br>Incorporated | Less Than<br>Significant<br>Impact  | No<br>Impact             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------------------------|-------------------------------------|--------------------------|
| a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated? | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?                        | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

*a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?*

As discussed in Section 4.15, Public Services, residents of the proposed project would be expected to use local parks and community facilities within the City as well as regional recreational facilities. Although the proposed project would incrementally increase use of these facilities, this minor increase in use is not expected to result in substantial physical deterioration of local parks, trails, and community centers and this impact would be less than significant. Specifically, the proposed project is anticipated to increase the City's population by less than one percent and these facilities are anticipated to have capacity to serve this minimal increase in demand. In addition, the project applicant would be required to pay development impact fees for parks and recreation facilities. Therefore, with payment of development impact fees, the proposed project would have a less-than-significant impact on existing parks or other recreational facilities.

*b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?*

The proposed project would involve development of the project site with residential uses. The proposed project does not include or require the construction or expansion of existing public recreational facilities. Therefore, development of the proposed project and associated recreational opportunities for use by project residents would not result in additional environmental effects beyond those described in this document, and no impact would occur.

## 4.17 TRANSPORTATION

|                                                                                                                                                                  | Potentially<br>Significant<br>Impact | Less Than<br>Significant with<br>Mitigation<br>Incorporated | Less Than<br>Significant<br>Impact  | No<br>Impact             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------------------------|-------------------------------------|--------------------------|
| Would the project:                                                                                                                                               |                                      |                                                             |                                     |                          |
| a. Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?          | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b. Conflict or be inconsistent with CEQA Guidelines §15064.3, subdivision (b)?                                                                                   | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d. Result in inadequate emergency access?                                                                                                                        | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

*a. Would the project conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?*

This section is based on the Traffic Impact Study (TIS) prepared for the proposed project.<sup>38</sup> The TIS is included as Appendix F.

When preparing a TIS, guidelines set by affected agencies are followed. In analyzing street and intersection capacities the LOS methodologies are applied. LOS standards are applied by transportation agencies to quantitatively assess a street and highway system's performance. In addition, safety concerns are analyzed to determine the need for appropriate mitigation resulting from increased traffic near sensitive uses, the need for dedicated ingress and egress access lanes to the project, and other evaluations such as the need for signalized intersections or other improvements. Guidelines incorporated in the Highway Capacity Manual (HCM), 6th Edition, published in 2016 were also used in the development of this TIS. The study area for the TIS included the following study intersections and roadway segments.

### Intersections

- 12th Avenue/Glendale Avenue
- 12th Avenue/SR-198 westbound (WB) Ramps
- 12th Avenue/SR-198 eastbound (EB) Ramps
- Campus Drive/Lacey Boulevard
- Campus Drive/7th Street
- Campus Drive/6th Street
- 11th Avenue/Lacey Boulevard
- 11th Avenue /7th Street
- 11th Avenue/6th Street
- 11th Avenue/5th Street
- 11th Avenue/4th Street-SR-198 WB On Ramp
- 11th Avenue/3rd Street-SR-198 EB Off Ramp

<sup>38</sup> VRPA Technologies, Inc. 2020. *Draft Hanford Place Development Traffic Impact Study*. December.

## Segments

1. Lacey Boulevard
  - 12th Avenue to Campus Drive
  - Campus Drive to 11th Avenue
  - 7th Street
  - Campus Drive to 11th Avenue
2. 6th Street
  - Campus Drive to 11th Avenue
3. Glendale Avenue
  - East of 12th Avenue
4. 5th Avenue
  - West of 11th Avenue
5. Campus Drive
  - Lacey Boulevard to Glendale Avenue

The TIS includes the LOS analysis for the following traffic scenarios:

- Existing Conditions
- Existing Plus Project
- Near-Term Plus Project
- Cumulative Year 2042 Without Project
- Cumulative Year 2042 Plus Project

**Existing Traffic Counts and Roadway Geometrics.** The first step toward assessing project traffic impacts is to assess existing traffic conditions. Existing traffic counts were estimated considering the Kings County Association of Governments (KCAG) travel model and historic traffic counts in the study area given the COVID-19 pandemic. The methodology used for the development of existing traffic counts included the following:

- A comparison of the KCAG base year and future year travel model showed that the growth in the study area is approximately 2 percent per year. The 2 percent per year growth rate was applied to historical average daily trip (ADT) counts collected in the study area to estimate Year 2020 pre-COVID conditions.
- The estimated pre-COVID year 2020 ADT values (obtained using the 2 percent per year growth rate) were compared to October 2020 ADT values. Results of the comparison indicated that traffic counts taken in October 2020 ADT (i.e., during COVID) should be increased by a factor of 1.30 to estimate 2020 pre-COVID levels.
- Where intersection turning movement counts in years prior to 2020 are available, a 2 percent per year growth rate was applied to estimate year 2020 conditions.
- Where intersection turning movement counts are not available in years prior to 2020, a factor of 1.3 was applied to the October 2020 turning movement counts collected in the study area.

**City of Hanford Level of Service Policies.** The City of Hanford adopts minimum levels of service to control congestion that may result as new development occurs.

The City of Hanford General Plan Circulation Element states: “The City of Hanford has adopted an overall LOS standard of C with peak hour LOS standard of D acceptable in some instances. Due to the nature of the roadway system, improvements to existing developed areas are extremely difficult. As a result, there may be instances where a lower LOS is acceptable.”

The City of Hanford General Plan Objective CI 2 states: “Provide timely and effective means of programming and constructing street and highway improvements to maintain an overall Level of Service of “C”, with a peak hour Level of Service of “D” as defined in the HCM (published by the Transportation Research Board of the National Research Council) or better unless the City’s design considerations or other public health, safety, or welfare factors determine otherwise.”

The City of Hanford General Plan Policy CI 2.2 states: “Street improvements shall be prioritized with emphasis on current and forecasted service levels. Roadways experiencing or forecasted to experience conditions less than Level-of-Service “D” shall require improvements, unless the City’s design considerations or other public health, safety or welfare factors determine otherwise.”

**Caltrans Level of Service Policies.** With the changes brought about by SB 743 (described further in 4.17.1.b below), Caltrans no longer uses LOS to determine the need for transportation improvements. Instead, the focus is on providing adequate facilities for pedestrians, bicycles, and transit as well as safety considerations for all transportation modes. Guidance is provided in the Transportation Impact Study Guide dated May 20, 2020, and the Interim Land Development and Intergovernmental Review Safety Review Practitioners Guidance dated July 2020. This guidance was used in determining the need for roadway improvements on Caltrans facilities.

**Project Trip Generation.** To assess potential impacts that the project may have on the surrounding roadway network, the first step was to determine project trip generation. Project trip generation is identified in Table 4.Q based on trip generation rates from the Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition) and the ITE Trip Generation Handbook (3rd Edition).

As discussed in Chapter 3.0, Project Description, 41,500 square feet of medical/commercial uses is currently proposed. However, the TIS evaluated 114,000 square feet of medical/commercial uses. As such, the proposed project would generate fewer trips than analyzed in the TIS/proposed project trip generation estimate. Thus, this analysis evaluates a project with higher trip generation potential. Therefore, this analysis can be considered conservative.

**Intersection Capacity Analysis.** Intersection LOS analysis was conducted using the Synchro software program. Synchro supports HCM methodologies and is deemed an acceptable program by City of Hanford staff for assessment of traffic impacts. LOS can be determined for both signalized and unsignalized intersections. Table 4.R indicates the ranges in the amounts of average delay for a vehicle at signalized and unsignalized intersections for the various levels of service ranging from LOS “A” to “F”.

**Table 4.Q: Project Trip Generation**

| Land Use                                   | Average Daily Trips | Weekday AM Peak Hour |            |            | Weekday PM Peak Hour |            |            |
|--------------------------------------------|---------------------|----------------------|------------|------------|----------------------|------------|------------|
|                                            |                     | In                   | Out        | Total      | In                   | Out        | Total      |
| Ambulatory Surgery Center                  | 148                 | 46                   | 13         | 59         | 9                    | 21         | 30         |
| Specialty Clinic                           | 475                 | 36                   | 10         | 46         | 13                   | 31         | 44         |
| Medical Office Building                    | 869                 | 51                   | 14         | 65         | 24                   | 62         | 86         |
| Psychiatric Health Facility                | 56                  | 12                   | 10         | 22         | 10                   | 12         | 22         |
| Hotel & Conference Center                  | 758                 | 28                   | 19         | 47         | 27                   | 26         | 53         |
| Nursing College                            | 709                 | 55                   | 17         | 72         | 32                   | 33         | 65         |
| Skilled Nursing Facility                   | 363                 | 23                   | 7          | 30         | 13                   | 19         | 32         |
| Memory Care                                | 229                 | 15                   | 4          | 19         | 9                    | 12         | 21         |
| Assisted Living Facility                   | 144                 | 10                   | 3          | 13         | 5                    | 12         | 17         |
| Multi-Family Apartment                     | 640                 | 10                   | 33         | 43         | 34                   | 20         | 54         |
| Medical/ Commercial                        | 3,934               | 234                  | 66         | 300        | 112                  | 288        | 400        |
| <b>Subtotal Trip Generation</b>            | <b>8,325</b>        | <b>520</b>           | <b>196</b> | <b>716</b> | <b>288</b>           | <b>536</b> | <b>824</b> |
| <b>Internal Vehicle Trips (10 percent)</b> | <b>833</b>          | <b>52</b>            | <b>20</b>  | <b>72</b>  | <b>29</b>            | <b>54</b>  | <b>82</b>  |
| <b>Total External Trip Generation</b>      | <b>7,493</b>        | <b>468</b>           | <b>176</b> | <b>644</b> | <b>259</b>           | <b>482</b> | <b>742</b> |

Source: VRPA Technologies, Inc. (2020).

**Table 4.R: Relationship of Delay to Level of Service**

| Level of Service | Signalized Intersections Average Total Delay (seconds/vehicle) | Unsignalized Intersections Average Total Delay (seconds/vehicle) |
|------------------|----------------------------------------------------------------|------------------------------------------------------------------|
| A                | ≤10.0                                                          | 0.0-10.0                                                         |
| B                | >10.0-20.0                                                     | >10.0-15.0                                                       |
| C                | >20.0-35.0                                                     | >15.0-25.0                                                       |
| D                | >35.0-55.0                                                     | >25.0-35.0                                                       |
| E                | >55.0-80.0                                                     | >35.0-50.0                                                       |
| F                | >80.0                                                          | >50.0                                                            |

Source: *Highway Capacity Manual*, 6<sup>th</sup> Edition (Transportation Research Board 2016).

When an unsignalized intersection does not meet acceptable LOS standards, the investigation of the need for a traffic signal shall be evaluated. The latest edition of the California Manual on Uniform Traffic Control Devices for Streets and Highways (California MUTCD) introduces standards for determining the need for traffic signals. The California MUTCD indicates that the satisfaction of one or more traffic signal warrants does not in itself require the installation of a traffic signal. In addition to the warrant analysis, an engineering study of the current or expected traffic conditions should be conducted to determine whether the installation of a traffic signal is justified. The California MUTCD Peak Hour Warrant (Warrant 3) was used to determine if a traffic signal is warranted at unsignalized intersections that fall below current LOS standards.

Table 4.S shows the intersection LOS for the existing conditions. Results of the analysis show that the 12th Avenue at Glendale Avenue intersection currently exceeds the City of Hanford's minimum LOS criteria during the PM peak hour. Table 4.S also provides the intersection LOS analysis for the study intersections for Existing Plus Project Scenario, Near-Term Traffic Conditions, and Cumulative Year 2042 Plus Project Traffic Conditions.

**Table 4.S: Intersection Operations**

| Intersection                                                 | Peak Hour | Existing Without Project |     | Existing Plus Project |     | Near-Term Plus Project |     | Cumulative Year 2042 Without Project |     | Cumulative Year 2042 Plus Project |     |
|--------------------------------------------------------------|-----------|--------------------------|-----|-----------------------|-----|------------------------|-----|--------------------------------------|-----|-----------------------------------|-----|
|                                                              |           | Delay                    | LOS | Delay                 | LOS | Delay                  | LOS | Delay                                | LOS | Delay                             | LOS |
| 1. 12th Avenue / Glendale Avenue <sup>1</sup>                | AM        | 22.7                     | C   | 30.2                  | D   | <b>37.2</b>            | E   | <b>74.4</b>                          | F   | <b>154.4</b>                      | F + |
|                                                              | PM        | <b>100.4</b>             | F+  | <b>184.6</b>          | F + | <b>269.9</b>           | F + | ++                                   | F   | ++                                | F + |
| 2. 12th Avenue / SR-198 WB Ramps <sup>2</sup>                | AM        | 13.8                     | B   | 13.7                  | B   | 14.5                   | B   | 18.8                                 | B   | 19.9                              | B   |
|                                                              | PM        | 17.8                     | B   | 19.4                  | B   | 23.0                   | C   | 64.5                                 | E   | 75.1                              | E   |
| 3. 12th Avenue / SR-198 EB Ramps <sup>2</sup>                | AM        | 11.9                     | B   | 12.5                  | B   | 12.7                   | B   | 13.2                                 | B   | 13.7                              | B   |
|                                                              | PM        | 13.0                     | B   | 13.6                  | B   | 14.3                   | B   | 19.0                                 | B   | 20.1                              | C   |
| 4. Campus Drive / Lacey Boulevard <sup>2</sup>               | AM        | 25.0                     | C   | 25.2                  | C   | 25.4                   | C   | 25.7                                 | C   | 25.5                              | C   |
|                                                              | PM        | 28.0                     | C   | 29.2                  | C   | 31.4                   | C   | 52.2                                 | D   | 52.9                              | D   |
| 5. Campus Drive / 7th Street <sup>3</sup>                    | AM        | 9.9                      | A   | 11.9                  | B   | 12.6                   | B   | 12.1                                 | B   | 15.0                              | B   |
|                                                              | PM        | 15.6                     | C   | 23.7                  | C   | 31.8                   | D   | <b>92.9</b>                          | F   | <b>146.9</b>                      | F   |
| 6. Campus Drive / 6th Street <sup>1</sup>                    | AM        | 10.4                     | B   | 13.3                  | B   | 13.6                   | B   | 10.7                                 | B   | 13.1                              | B   |
|                                                              | PM        | 10.6                     | B   | 13.9                  | B   | 14.3                   | B   | 11.5                                 | B   | 14.7                              | B   |
| 7. 11th Avenue / Lacey Boulevard <sup>2</sup>                | AM        | 20.4                     | C   | 20.3                  | C   | 21.0                   | C   | 25.3                                 | C   | 25.9                              | C   |
|                                                              | PM        | 27.5                     | C   | 28.5                  | C   | 31.6                   | C   | 49.9                                 | D   | 52.7                              | D   |
| 8. 11th Avenue / 7th Street <sup>2</sup>                     | AM        | 18.9                     | C   | 18.9                  | B   | 19.7                   | B   | 24.2                                 | C   | 24.4                              | C   |
|                                                              | PM        | 28.8                     | C   | 29.0                  | C   | 31.8                   | C   | <b>55.6</b>                          | E   | <b>57.6</b>                       | E   |
| 9. 11th Avenue / 6th Street <sup>1</sup>                     | AM        | 12.6                     | B   | 12.7                  | B   | 13.3                   | B   | 17.1                                 | C   | 17.3                              | C   |
|                                                              | PM        | 17.4                     | C   | 18.1                  | C   | 20.6                   | C   | <b>74.3</b>                          | F   | <b>83.6</b>                       | F   |
| 10. 11th Avenue / 5th Street <sup>2</sup>                    | AM        | 4.9                      | A   | 9.6                   | A   | 9.7                    | A   | 6.5                                  | A   | 10.7                              | B   |
|                                                              | PM        | 121                      | B   | 18.1                  | B   | 19.5                   | B   | 23.8                                 | C   | 42.3                              | D   |
| 11. 11th Avenue / 4th Street-SR-98 WB On Ramp <sup>2</sup>   | AM        | 10.0                     | B   | 15.3                  | B   | 15.9                   | B   | 16.4                                 | B   | 20.8                              | C   |
|                                                              | PM        | 12.7                     | B   | 14.6                  | B   | 15.6                   | B   | 21.0                                 | C   | 28.4                              | C   |
| 12. 11th Avenue / 3rd Street-SR 198-EB Off Ramp <sup>2</sup> | AM        | 18.6                     | B   | 21.0                  | C   | 22.9                   | C   | 27.0                                 | C   | 30.2                              | C   |
|                                                              | PM        | 25.1                     | C   | 30.6                  | C   | 35.4                   | D   | 76.3                                 | E   | 97.4                              | F   |

Source: VRPA Technologies, Inc. (2020).

Notes:

**Bold** denotes LOS standard has been exceeded.

+ Meets peak hour signal warrants.

++ Delay Exceeds 300 seconds.

<sup>1</sup> Two-way stop sign

<sup>2</sup> Signalized

<sup>3</sup> All-way stop sign

Results of the analysis show that the proposed project contribute to an unacceptable LOS at five of the study intersections when comparing the Cumulative Year 2042 scenarios. Potential intersection improvements are discussed below.

**12th Avenue at Glendale Avenue.** Installation of a traffic signal would alleviate LOS deficiencies at the intersection for all study scenarios. However, providing a traffic signal at this location is not practical given the close spacing of adjacent intersections. In lieu of the traffic signal, dual right turn lanes for the eastbound and westbound approaches to the intersection should be considered to alleviate queuing at the eastbound and westbound approaches.

**Campus Drive at 7th Street.** Installation of a traffic signal at Campus Drive at 7th Street would improve the intersection to meet the City of Hanford's acceptable LOS standard of 'D' for the Cumulative Year 2042 Plus Project scenario.

**11th Avenue at 7th Street.** Providing additional turning movement lanes along 11th Avenue and 7th Street is not possible due to design constraints or infeasible/impractical due to the presence of commercial development that currently exists along the north and south side of 7th Street.

**11th Avenue at 6th Street.** This intersection is forecasted to operate at unacceptable LOS 'F' during the PM peak hour under Cumulative Year 2042 Without Project and Cumulative Year 2042 Plus Project conditions; however, this intersection does not meet the peak hour traffic signal warrant because the minor approaches do not carry enough traffic to justify signalization. Therefore, no improvements are recommended for the project's contribution of traffic at the intersection for the Cumulative Year 2042 Plus Project condition.

**12th Avenue at SR-198 WB Ramps.** Providing additional turning movement lanes at the 12th Avenue and SR -98 WB Ramps intersection is not possible due to design constraints or infeasible/impractical due to the presence of development that currently exists along the north side of the SR-198 WB Ramps. As noted above, Caltrans no longer uses LOS to determine the need for transportation improvements. Instead, focus is on providing adequate facilities for pedestrians, bicycles, and transit as well as safety considerations for all transportation modes.

**Campus Drive at 7th Street.** Providing additional turning movement lanes at the 11th Avenue and 3rd Street-SR-198 EB Off Ramp intersection is not possible due to design constraints or infeasible/impractical due to the presence of development that currently exists along the south side of 3rd Street and the SR-198 EB Off Ramp. As above, Caltrans no longer uses LOS to determine the need for transportation improvements. Instead, focus is on providing adequate facilities for pedestrians, bicycles, and transit as well as safety considerations for all transportation modes.

Intersection operations with these potential improvements is shown in Table 4.T below. As shown in Table 4.T, the intersection of 12th Avenue at Glendale Avenue would be above the City's standard of LOS D standard; however, the City acknowledges in General Plan Objective CI 2 and Policy CI 2.2, that there may be instances where design considerations or other public health, safety, or welfare factors determine otherwise. Therefore, since additional improvements are not recommended due design considerations, impacts to intersection LOS would be less than significant. No mitigation is required.

**Roadway Segment Analysis.** According to the HCM, LOS is categorized by two parameters of traffic: uninterrupted and interrupted flow. Uninterrupted flow facilities do not have fixed elements such as traffic signals that cause interruptions in traffic flow. Interrupted flow facilities do have fixed elements that cause an interruption in the flow of traffic, such as stop signs and signalized intersections along arterial roads. A roadway segment is defined as a stretch of roadway generally located between signalized or controlled intersections.



**Table 4.T: Intersection Operations with Improvements**

| Intersection                                    | Peak Hour | Existing Plus Project |                      | Near-Term Plus Project |                      | Cumulative Year 2042 Plus Project |                      |
|-------------------------------------------------|-----------|-----------------------|----------------------|------------------------|----------------------|-----------------------------------|----------------------|
|                                                 |           | Delay                 | LOS                  | Delay                  | LOS                  | Delay                             | LOS                  |
| 1. 12th Avenue / Glendale Avenue                | AM        | <b>30.2</b>           | <b>D</b>             | <b>37.2</b>            | <b>E<sup>1</sup></b> | <b>154.4</b>                      | <b>F<sup>1</sup></b> |
|                                                 | PM        | <b>184.6</b>          | <b>F<sup>1</sup></b> | <b>269.9</b>           | <b>F<sup>1</sup></b> | <b>++</b>                         | <b>F<sup>1</sup></b> |
| 2. 12th Avenue / SR-198 WB Ramps                | AM        | -                     | -                    | -                      | -                    | 19.9                              | B                    |
|                                                 | PM        | -                     | -                    | -                      | -                    | 75.1                              | E <sup>2</sup>       |
| 5. Campus Drive / 7th Street                    | AM        | -                     | -                    | -                      | -                    | 12.8                              | B                    |
|                                                 | PM        | -                     | -                    | -                      | -                    | 20.4                              | C                    |
| 8. 11th Avenue / 7th Street                     | AM        | -                     | -                    | -                      | -                    | 24.4                              | C                    |
|                                                 | PM        | -                     | -                    | -                      | -                    | 57.6                              | E <sup>2</sup>       |
| 9. 11th Avenue / 6th Street                     | AM        | -                     | -                    | -                      | -                    | 17.3                              | C                    |
|                                                 | PM        | -                     | -                    | -                      | -                    | 83.6                              | F <sup>3</sup>       |
| 12. 11th Avenue / 3rd Street-SR 198 EB Off Ramp | AM        | -                     | -                    | -                      | -                    | 30.2                              | C                    |
|                                                 | PM        | -                     | -                    | -                      | -                    | 97.4                              | F <sup>2</sup>       |

Source: Source: VRPA Technologies, Inc. (2020).

Notes:

**Bold** denotes LOS standard has been exceeded.

<sup>1</sup> Installation of a traffic signal would alleviate LOS deficiencies at the intersection. A traffic signal is not recommended given the close spacing of adjacent intersections.

<sup>2</sup> Improvements to the intersection aren't recommended given the presence of abutting commercial development at the intersection.

<sup>3</sup> Intersection does not meet the peak hour traffic signal warrant.

++ Delay exceeds 300 seconds.

Segment LOS is important in order to understand whether the capacity of a roadway can accommodate future traffic volumes. The performance criteria used for evaluating volumes and capacities on the road and highway system for this study were estimated using the Modified HCM-Based LOS Tables which are widely accepted throughout the central valley, including Kings County. The tables consider the capacity of individual road and highway segments based on numerous roadway variables (design speed, passing opportunities, signalized intersections per mile, number of lanes, saturation flow, etc.). These variables were identified and applied to reflect segment LOS conditions. Street segment capacity was determined using information shown in Table 4.U, which comes from the Modified Arterial Level of Service Tables included in Appendix A of the TIS.

**Table 4.U: Peak Hour Two-Way Volumes**

| Level of Service |           |     |       |       |       |
|------------------|-----------|-----|-------|-------|-------|
| Lanes            | Division  | B   | C     | D     | E     |
| 2                | Undivided | N/A | 324   | 1,125 | 1,521 |
| 2                | Divided   | N/A | 340   | 1,181 | 1,597 |
| 4                | Undivided | 77  | 2,083 | 2,763 | 2,890 |
| 4                | Divided   | 81  | 2,205 | 2,925 | 3,060 |
| 6                | Divided   | 135 | 3,339 | 4,401 | 4,617 |

Source: VRPA Technologies, Inc. (2020).

Results of the segment analysis along the existing street and highway system are reflected in Table 4.V. Table 4.V also shows the results of the analysis.

**Table 4.V: Segment Operations**

| Street Segment                     | Peak Hour | Existing |     | Existing Plus Project |     | Near-Term Plus Project |     | Cumulative Year 2042 Without Project |     | Cumulative Year 2042 Plus Project |     |
|------------------------------------|-----------|----------|-----|-----------------------|-----|------------------------|-----|--------------------------------------|-----|-----------------------------------|-----|
|                                    |           | Volume   | LOS | Volume                | LOS | Volume                 | LOS | Volume                               | LOS | Volume                            | LOS |
| Lacey Boulevard                    |           |          |     |                       |     |                        |     |                                      |     |                                   |     |
| 12th Avenue to Campus Drive        | AM        | 855      | C   | 919                   | C   | 990                    | C   | 1,322                                | C   | 1,386                             | C   |
|                                    | PM        | 1,693    | C   | 1,767                 | C   | 1,907                  | C   | 2,617                                | D   | 2,691                             | D   |
| Campus Drive to 11th Avenue        | AM        | 963      | C   | 1,027                 | C   | 1,107                  | C   | 1,489                                | C   | 1,553                             | C   |
|                                    | PM        | 1,873    | C   | 1,947                 | C   | 2,101                  | C   | 2,896                                | D   | 2,970                             | E   |
| 7th Street                         |           |          |     |                       |     |                        |     |                                      |     |                                   |     |
| Campus Drive to 11th Avenue        | AM        | 346      | D   | 378                   | D   | 407                    | D   | 535                                  | D   | 567                               | D   |
|                                    | PM        | 743      | D   | 780                   | D   | 841                    | D   | 1,149                                | E   | 1,186                             | E   |
| 6th Street                         |           |          |     |                       |     |                        |     |                                      |     |                                   |     |
| Campus Drive to 11th Avenue        | AM        | 127      | C   | 127                   | C   | 137                    | C   | 196                                  | C   | 196                               | C   |
|                                    | PM        | 142      | C   | 142                   | C   | 154                    | C   | 220                                  | C   | 220                               | C   |
| Glendale Avenue                    |           |          |     |                       |     |                        |     |                                      |     |                                   |     |
| East of 12th Avenue                | AM        | 130      | C   | 323                   | C   | 334                    | D   | 201                                  | C   | 394                               | D   |
|                                    | PM        | 163      | C   | 385                   | D   | 399                    | D   | 252                                  | C   | 474                               | D   |
| 5th Avenue                         |           |          |     |                       |     |                        |     |                                      |     |                                   |     |
| West of 11th Avenue                | AM        | 101      | C   | 359                   | D   | 367                    | D   | 156                                  | C   | 414                               | D   |
|                                    | PM        | 464      | D   | 760                   | D   | 799                    | D   | 717                                  | D   | 1,014                             | D   |
| Campus Drive                       |           |          |     |                       |     |                        |     |                                      |     |                                   |     |
| Lacey Boulevard to Glendale Avenue | AM        | 251      | C   | AM                    | 380 | D                      | 400 | D                                    | 388 | D                                 | 517 |
|                                    | PM        | 393      | D   | PM                    | 541 | D                      | 574 | D                                    | 608 | D                                 | 756 |

Source: VRPA Technologies, Inc. (2020).

Notes:

**Bold** denotes LOS standard has been exceeded.

As indicated in Table 4.V, two study roadway segments would exceed LOS standards in the Cumulative year 2042 scenarios. Potential roadway segments improvements are discussed below.

***Lacey Boulevard between Campus Drive and 11th Avenue.*** Providing additional travel lanes along Lacey Boulevard is not possible due to design constraints or infeasible/impractical due to the presence of retail development that currently exists along the north and south side of Lacey Boulevard. In addition, accommodating additional travel lanes along Lacey Boulevard could result in the elimination of parking along Lacey Boulevard.

***7th Street between Campus Drive and 11th Avenue.*** Restriping 7th Street between Campus Drive and 11th Avenue to provide two-way left turn lane with removal of parking as necessary would improve capacity on 7th Street Campus Drive and 11th. However, providing additional travel lanes along 7th Street is not possible due to right-of-way constraints.

Roadway operations with these potential improvements is shown in Table 4.W below. As shown in Table 4.W, Lacey Boulevard between Campus Drive and 11th Avenue and 7th Street between Campus Drive and 11th Avenue would be above the City's standard of LOS D standard; however, the City acknowledges in General Plan Objective CI 2 and Policy CI 2.2, that there may be instances where design considerations or other public health, safety, or welfare factors determine otherwise. Therefore, since additional improvements are not recommended due design considerations, impacts to roadway segment LOS would be less than significant. No mitigation is required.

**Table 4.W: Segment Operations with Improvements**

| Street Segment              | Peak Hour | Cumulative Year 2042 Plus Project |                |
|-----------------------------|-----------|-----------------------------------|----------------|
|                             |           | Volume                            | LOS            |
| Lacey Boulevard             |           |                                   |                |
| Campus Drive to 11th Avenue | AM        | 1,553                             | C              |
|                             | PM        | 2,970                             | E <sup>1</sup> |
| 7th Street                  |           |                                   |                |
| Campus Drive to 11th Avenue | AM        | 567                               | C              |
|                             | PM        | 1,186                             | E <sup>1</sup> |

Source: VRPA Technologies, Inc. (2020).

Notes:

**Bold** denotes LOS standard has been exceeded.

<sup>1</sup> Capacity increasing improvements to the roadway segment aren't recommended given the presence of abutting commercial development.

**b. Would the project conflict or be inconsistent with CEQA Guidelines §15064.3, subdivision (b)?**

On December 28, 2018, the California Office of Administrative Law cleared the revised *State CEQA Guidelines* for use. Among the changes to the guidelines was removal of vehicle delay and level of service from consideration under CEQA. With the adopted guidelines, transportation impacts are to be evaluated based on a project generated VMT.

The City has recently adopted its SB 743 guidelines – City of Hanford VMT Thresholds and Implementation Guidelines (guidelines), November 2022. Therefore, the project VMT analysis was conducted using the methodology and significant threshold criteria identified in the guidelines. As previously mentioned, the project includes residential, multiple medical uses, and commercial land uses. As per the guidelines, mixed-use projects should be evaluated separately for each component of the project using the applicable VMT metric. The VMT analysis is based on the Hanford Place Medical Mixed-use Development Project VMT Analysis Memorandum,<sup>39</sup> which is included as Appendix G.

The guidelines also provide screening criteria to screen out land use projects from a detailed VMT analysis. As per the guidelines, mixed-use projects should be evaluated separately for each component of the project using applicable VMT metrics. Based on the screening criteria, only the medical/commercial uses component of the project can be screened out of detailed VMT analysis

<sup>39</sup> LSA. 2023. *Hanford Place Medical Mixed-use Development Project Vehicle Miles Traveled (VMT) Analysis Memorandum*. March.

since the project would include less than 55,000 square feet of retail uses. However, the medical/commercial uses component was included in the project model run to appropriately account for the internal capture that will occur due to the mixed-use nature of the project. Given that the project land uses other than medical/commercial uses cannot be screened out, a detailed VMT analysis was conducted for these land uses.

For projects that require a detailed VMT analysis, the guidelines recommend use of KCAG travel demand model to conduct the VMT analysis. Therefore, the KCAG model was used for the VMT evaluation of the project. Numerical values for the regional thresholds (VMT per capita, VMT per employee, and VMT per service population) were obtained from the guidelines document – Table E: Significance Thresholds for VMT Analysis.

Table 4.X shows the result of the VMT analysis. As shown in Table 4.X, the project VMT per capita for residential component of the project is 39.9 percent lower than the regional threshold. Similarly, the project VMT per employee for the memory care, assisted living, and skilled nursing facility uses is 62.7 percent lower than the corresponding regional threshold. Also, the VMT per service population for rest of non-residential uses (except medical/commercial uses) is 43.6 percent lower than the regional threshold. As such, based on the project’s VMT analysis, the project would not have a significant VMT impact.

**Table 4.X: Project VMT Metrics and Regional Threshold Comparison**

|                            | Project | City of Hanford Threshold | Difference | Percent Difference |
|----------------------------|---------|---------------------------|------------|--------------------|
| VMT Per Capita             | 5.40    | 8.99                      | -3.59      | -39.9%             |
| VMT per Employee           | 6.32    | 16.95                     | -10.63     | -62.7%             |
| VMT per Service Population | 12.32   | 21.84                     | -9.52      | -43.6%             |

Source: Source: LSA (March 2023).

Note: The City of Hanford Threshold was obtained from the City of Hanford VMT Thresholds and Implementation Guidelines, Table E: Significance Thresholds for VMT Analysis (November 2022).

In summary, as described above the proposed project would not exceed the VMT regional average standards. As such the proposed project would not conflict with or be inconsistent with *State CEQA Guidelines* §15064.3, subdivision (b).

*c. Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?*

Vehicular access to the site would be provided by Glendale Avenue, 5th Street, and Campus Drive. The extension of these roadways would be constructed to City standards and would be dedicated as public right of way. The proposed project would also construct a roundabout, which would also be dedicated as public right of way and would be constructed to Caltrans or City-approved standards. As part of the project, Glendale Avenue would be realigned at the northwest corner of the Hanford Veterinary Hospital development. The existing knuckle would be removed, and Glendale Avenue would be realigned using speed-specific design curves. Any new portions of Glendale Avenue would be dedicated as public right of way and any portion of existing right of way not used would be

abandoned. 5th Street would be extended starting at the existing alignment before realigning to the roundabout.

The proposed project would not include any sharp curves or other roadway design elements that would create dangerous conditions. In addition, the project design features would be required to comply with standards set by the City's General Plan and City Engineer. In addition, the proposed project would also be required to submit plans to the City Fire Department for review and approval prior to the issuance of building permits to ensure there are no substantial hazards associated with the project design. Therefore, the proposed project would result in a less-than-significant impact related to hazards associated with a design feature, and no mitigation is required.

*d. Would the project result in inadequate emergency access?*

Emergency access would be provided to the project site by Glendale Avenue, 5th Street, and Campus Drive. Further, the proposed project's site plan would be subject to review and approval by the City Fire Department to ensure the project includes adequate emergency access. In addition, as discussed in Response 4.9.f, project implementation would not physically interfere with emergency evacuation or the City Fire Department access to and from the project site. Therefore, the proposed project would result in less-than-significant impacts related to emergency access, and no mitigation is required.

#### 4.18 TRIBAL CULTURAL RESOURCES

|                                                                                                                                                                                                                                                                                                                                                                                                                          | Potentially<br>Significant<br>Impact | Less Than<br>Significant with<br>Mitigation<br>Incorporated | Less Than<br>Significant<br>Impact | No<br>Impact             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------------------------|------------------------------------|--------------------------|
| Would the project:                                                                                                                                                                                                                                                                                                                                                                                                       |                                      |                                                             |                                    |                          |
| a. Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:                                             |                                      |                                                             |                                    |                          |
| i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)? Or                                                                                                                                                                                                                           | <input type="checkbox"/>             | <input checked="" type="checkbox"/>                         | <input type="checkbox"/>           | <input type="checkbox"/> |
| ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe. | <input type="checkbox"/>             | <input checked="" type="checkbox"/>                         | <input type="checkbox"/>           | <input type="checkbox"/> |

- a. Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:*
- i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)? Or*
  - ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.*

AB 52, which became law on January 1, 2015, provides for consultation with California Native American tribes during the CEQA environmental review process, and equates significant impacts to “tribal cultural resources” with significant environmental impacts.

Public Resources Code (PRC) Section 21074 states that “tribal cultural resources” are:

Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe and are one of the following:

- Included or determined to be eligible for inclusion in the California Register of Historical Resources;
- Included in a local register of historical resources as defined in subdivision (k) of PRC Section 5020.1; or
- A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

A “historical resource” (PRC Section 21084.1), a “unique archaeological resource” (PRC Section 21083.2(g)), or a “nonunique archaeological resource” (PRC Section 21083.2 (h)) may also be a tribal cultural resource if it is included or determined to be eligible for inclusion in the California Register. The consultation provisions of the law require that a public agency consult with local Native American tribes that have requested placement on that agency’s notification list for CEQA projects. Within 14 days of determining that a project application is complete, or a decision by a public agency to undertake a project, the lead agency must notify tribes of the opportunity to consult on the project, should a tribe have previously requested to be on the agency’s notification list. California Native American tribes must be recognized by the NAHC as traditionally and culturally affiliated with the project site and must have previously requested that the lead agency notify them of projects. Tribes have 30 days following notification of a project to request consultation with the lead agency.

The purpose of consultation is to inform the lead agency in its identification and determination of the significance of tribal cultural resources. If a project is determined to result in a significant impact on an identified tribal cultural resource, the consultation process must occur and conclude prior to adoption of a Negative Declaration or Mitigated Negative Declaration, or certification of an Environmental Impact Report (PRC Sections 21080.3.1, 21080.3.2, 21082.3).

California Native American tribes traditionally and culturally affiliated with the project site and area were notified of the proposed project on August 5, 2020. Follow-up contact by email and telephone was completed on August 13, 2020. No responses have been received to date.

The proposed excavation of the project sites could potentially result in adverse effects of unanticipated tribal cultural resources. Mitigation Measures CULT-1 through CULT-3 would address unknown archaeological materials and unknown human remains. In addition, in order to address the concerns of the Tachi Yokut Tribe, the City is requiring the implementation of a Burial Treatment Plan as a mitigation measure on all projects. Mitigation Measure CULT-4 would ensure implementation of a Burial Treatment Plan and would reduce impacts to a less than significant level. Therefore, implementation of Mitigation Measures CULT-1 through CULT-4, the proposed project would not have a significant impact on tribal cultural resources.



#### 4.19 UTILITIES AND SERVICE SYSTEMS

|                                                                                                                                                                                                                                                                                     | Potentially<br>Significant<br>Impact | Less Than<br>Significant with<br>Mitigation<br>Incorporated | Less Than<br>Significant<br>Impact  | No<br>Impact             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------------------------|-------------------------------------|--------------------------|
| Would the project:                                                                                                                                                                                                                                                                  |                                      |                                                             |                                     |                          |
| a. Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects? | <input type="checkbox"/>             | <input checked="" type="checkbox"/>                         | <input type="checkbox"/>            | <input type="checkbox"/> |
| b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?                                                                                                                           | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?                                                   | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?                                                                                             | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?                                                                                                                                                                  | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

*a. Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?*

As identified in Section 2.0, Project Description, utilities required to serve the proposed project would include water, sanitary sewer, storm water drainage, electricity, natural gas, and telecommunications infrastructure. Water service, sewage disposal, and refuse collection would be provided by the City of Hanford. In addition, all City utilities (i.e., water, sewer, and storm drain) would be constructed within the proposed right of way. Storm drainage would be collected by an underground conveyance system and delivered to the onsite bio infiltration basin. The basin would be privately held by the owners and would collect both the proposed project and the City right of way. All storm drain facilities would be designed to City standards.

**Water.** The City of Hanford provides water service to the project site. Based on the City's 2020 Urban Water Management Plan (UWMP), the City currently uses local groundwater as the sole source of water supply and does not purchase or import water from any other water suppliers or entities. At the time of preparation of the 2020 UWMP, the City had recorded metered water deliveries to 17,965 accounts. The total amount of metered water delivered in 2020 was 11,714

acre-feet per year (afy). Based on the 2020 UWMP, the total project water demand for customers served by the City of Hanford will be 12,172 afy in 2030.<sup>40</sup>

Short term demand for water may occur during excavation, grading, and construction activities on site. Construction activities would require water primarily for dust mitigation purposes. Water from the existing potable water lines in the vicinity of the project site would be used. Overall, short-term construction activities would require minimal water and are not expected to have any adverse impacts on the existing water system or available water supplies. The proposed project would not require the construction of new or expanded water conveyance, treatment, or collection facilities with respect to construction activities. Therefore, the impacts on water facilities during construction would be less than significant, and no mitigation is required.

According to water demand factors included in CalEEMod, the proposed project is estimated to demand approximately 77,272 gallons per day (gpd) or 86.6 afy of water. Therefore, the estimated increase in water demand associated with the project would represent approximately 0.7 percent of the City's projected potable water demand of 12,172 afy in 2030. The project-generated increase in water demand would be minimal and would fall within the City's existing capacity and available supply. As such, the proposed project would not necessitate new or expanded water entitlements, and the City would be able to accommodate the increased demand for potable water.

**Wastewater.** The City collects wastewater from residential, commercial, and industrial customers within the City limits and some unincorporated areas. The collected flows are conveyed through a trunk system to a Wastewater Treatment Facility (WWTF) in the south of the City. The City's large industrial area near the southern boundary of the City limits collect flows at a series of lift stations before being pumped north to the WWTF. Based on available data received from City staff, the WWTF treated an average annual wastewater flow of approximately 4,944 afy in 2020.<sup>41</sup>

No significant increase in wastewater flows is anticipated as a result of construction activities on the project site. Sanitary services during construction would be provided by portable toilet facilities, which transport waste off-site for treatment and disposal. Therefore, during construction, potential impacts to wastewater treatment and wastewater conveyance infrastructure would be less than significant, and no mitigation would be required.

As discussed above, according to water demand factors included in CalEEMod, the proposed project is estimated to demand approximately 77,272 gpd or 86.6 afy of water. Wastewater generation associated with the proposed project is not anticipated to exceed the WWTF wastewater treatment requirements or exceed the available capacity to accommodate the increased wastewater flows from the proposed project. The project would be adequately served by the capacity and the existing wastewater conveyance system. As such, the proposed project would not necessitate new or

<sup>40</sup> Hanford, City of. 2021. *2020 Urban Water Management Plan*. October. Website: [http://cms6.revize.com/revize/hanfordca/document\\_center/Public%20Works/Water%20Management/2020%20UWMP,%20Final.pdf](http://cms6.revize.com/revize/hanfordca/document_center/Public%20Works/Water%20Management/2020%20UWMP,%20Final.pdf) (accessed March 2023).

<sup>41</sup> Ibid,

expanded water entitlements, and the City would be able to accommodate the increased demand for potable water.

**Stormwater and Drainage Facilities.** During construction activities, soil would be exposed and disturbed, drainage patterns would be temporarily altered during grading and other construction activities, and there would be an increased potential for soil erosion and siltation compared to existing conditions. Additionally, during a storm event, soil erosion and siltation could occur at an accelerated rate. As discussed above in Response 4.10.a, Mitigation Measure HYDRO-1 requires compliance with applicable permits and preparation of a SWPPP to identify construction BMPs to be implemented as part of the proposed project to reduce impacts to water quality during construction, including those impacts associated with soil erosion and siltation. Compliance with applicable permit requirements and implementation of the construction BMPs would ensure that the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental impacts, and the impact would be less than significant with implementation of Mitigation Measure HYDRO-1.

Once operational, implementation of the proposed project would result in new internal access roads and surface parking lots, increasing impervious surface area which is not prone to erosion or siltation. The project would also include landscaping that would minimize erosion and siltation. The project site would be designed for storm water to be captured by the storm drain system, which would be collected by an underground conveyance system and delivered to the onsite bio infiltration basin. The basin would be privately held by the owners and would collect both the proposed project and the City right of way. All storm drain facilities would be designed to City standards. The proposed project would also convert the Peoples Ditch to a 66-inch-diameter below-ground pipeline where the ditch currently exists. The depth of the below-ground pipeline would be between two and six feet. Storm drainage facilities would be constructed to City standards, which would ensure that sufficient capacity in the downstream drain systems is available to accommodate any increase in storm runoff from the project site so that on- and off-site flooding does not occur.

With the adherence to Mitigation Measure HYDRO-1, the proposed project would result in less than significant impacts related to the construction or expansion of stormwater drainage facilities. No additional mitigation is required.

**Electricity.** Electrical power would be supplied to the proposed project site by SCE. SCE provides services through a grid of transmission lines and related facilities. SCE provides electricity to more than 15 million people in a 50,000 sq mi area of Central, Coastal, and Southern California.<sup>42</sup> According to the CEC, total electricity consumption in the SCE service area in 2021 was 103,045 GWh.<sup>43</sup> Total electricity consumption in Kings County was 1,980 GWh or 1,980,705,673 kWh.<sup>44</sup>

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<sup>42</sup> Southern California Edison (SCE). 2020. About Us. Website: <https://www.sce.com/about-us/who-we-are> (accessed March 2023).

<sup>43</sup> California Energy Commission. 2022b. Energy Consumption Data Management Service. Electricity Consumption by County and Entity. Website: [www.ecdms.energy.ca.gov/elecbycounty.aspx](http://www.ecdms.energy.ca.gov/elecbycounty.aspx) (accessed March 2023).

<sup>44</sup> Ibid.

Short-term construction activities would be limited to providing power to the staging area and portable construction equipment and would not substantially increase demand for electricity. The heavy equipment used for construction is primarily powered by diesel fuel. Temporary electric power would be provided via existing utility boxes and lines on the project site. Given the limited nature of potential demand for electricity during construction and the availability of existing power lines on the site, there would not be a need to construct new or alter existing electric transmission facilities. Impacts to local regional supplies of electricity would be less than significant, and no mitigation is required.

The proposed project includes connections to the surrounding electrical system on site. Operation of the proposed project would increase on-site electricity demand. As discussed in Response 4.6.a, the estimated potential increased electricity demand associated with the proposed project is 5,345,159 kWh per year. Therefore, electricity demand associated with the proposed project would only be approximately 0.27 percent of Kings County's total electricity demand. Because the proposed project would only represent a small fraction of electricity demand in Kings County, the project would meet Title 24 requirements and incorporate additional energy conservation measures, and there would be sufficient electricity supplies available, energy demand for the proposed project would be less than significant. Therefore, although the proposed project would require the construction of new improvements related to the provision of electricity service, the proposed project would not result in significant environmental impacts and the proposed project's impacts would be less than significant. No mitigation is required.

**Natural Gas.** The Southern California Gas Company (SoCalGas) is the natural gas service provider for the project site. SoCalGas provides natural gas to approximately 21.8 million people in a 24,000-square-mile service area throughout Central and Southern California, from Visalia to the Mexican border.<sup>45</sup> According to the CEC, total natural gas consumption in the SoCalGas service area in 2021 was 6,755 million therms (2,308 million therms for the residential sector). Kings County consumed approximately 64 million therms or approximately 64,004,283 therms.<sup>46</sup>

Operation of the proposed project would increase on-site natural gas demand. As discussed in Response 4.6.a, the estimated potential increased natural gas demand associated with the proposed project is 116,068 therms per year. Therefore, natural gas demand associated with the proposed project would only be approximately 0.18 percent of Kings County's total natural gas demand. Because the proposed project would only represent a small fraction of electricity demand in Kings County, the project would meet Title 24 requirements and incorporate additional energy conservation measures, and there would be sufficient natural gas supplies available, energy demand for the proposed project would be less than significant. Therefore, although the proposed project would require the construction of new improvements related to the provision of natural gas service, the proposed project would not result in significant environmental impacts and the proposed project's impacts would be less than significant. No mitigation is required.

<sup>45</sup> Southern California Gas Company (SoCalGas). 2020. About SoCalGas. Website: <https://www3.socalgas.com/about-us/company-profile> (accessed March 2023).

<sup>46</sup> California Energy Commission. 2022c. Energy Consumption Data Management Service. Gas Consumption by County and Entity. Website: [www.ecdms.energy.ca.gov/gasbycounty.aspx](http://www.ecdms.energy.ca.gov/gasbycounty.aspx) (accessed March 2023).

**Telecommunication Facilities.** Existing telephone, cable, and internet service lines in the vicinity would serve the project site. Internal to the project site, the project Applicant/Developer would be responsible for constructing adequate telecommunication facility extensions for the proposed project. The reconfiguration of these facilities would occur on site during the site preparation and earthwork phase and are not expected to impact any telephone, cable, or internet services offsite that serve the surrounding areas. Additionally, telecommunication facilities are generally installed concurrently with utility expansions and impacts associated with the expansion of telecommunication facilities are already considered in the air quality, noise, and construction traffic analysis. Therefore, the project impacts associated with the relocation or construction of new or expanded telecommunication facilities and impacts would be less than significant. No mitigation is required.

**Summary.** The proposed project would not require or result in the relocation or construction of new or expanded facilities for water, wastewater treatment, storm drainage, electric power, natural gas, or telecommunications. With implementation of Mitigation Measure HYDRO-1 included in Section 4.10, Hydrology and Water Quality, the project would not substantially increase demand upon these facilities. Therefore, impacts to these utility facilities would be less than significant.

*b. Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?*

Refer to discussion a) of Section 4.10, Hydrology and Water Quality. As discussed above, sufficient water supply would be available to serve the project site. As a result, the project would result in a less-than-significant impact related to water supply.

*c. Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?*

The proposed project is not expected to exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.

*d. Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?*

Solid waste and recycling pickup and disposal in the City of Hanford is provided by the Kings Waste Management Authority (KWMA). The KWMA does not operate an active landfill. Waste is hauled by transfer trucks from the Material Recover Facility (MRF) to the State permitted 320-acre Chemical Waste Management Landfill site in Kettleman Hills, approximately 45 miles west of the MRF. A combined MRF and Transfer Station (TS) was constructed near the old landfill southeast of Hanford. The MRF and TS facility includes a small but complete Household Hazardous Waste collection station.<sup>47</sup> Waste Management Kettleman Hills Landfill is permitted to receive a maximum of 2,000 tons of municipal solid waste per day, but typically receives an average of only about 1,350 tons per

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<sup>47</sup> Hanford, City of. 2017, op. cit.

day.<sup>48</sup> In addition, Waste Management Kettleman Hills Landfill is currently proposing a facility expansion to extend its hazardous waste operations and increase the capacity at the existing landfill.<sup>49</sup>

Based on the CalEEMod output, operation of the proposed project would generate approximately 5,896 pounds of solid waste per day or about 3 tons of solid waste per day. Given the available capacity at the landfill, the additional solid waste generated by the proposed project is not anticipated to cause the facility to exceed its daily permitted capacity. As such, the project would be served by a landfill with sufficient capacity to accommodate the project's waste disposal needs, and impacts associated with the disposition of solid waste would be less than significant.

*e. Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?*

The proposed project would comply with all federal, State, and local solid waste statutes and/or regulations related to solid waste. Also refer to Response 4.19.d. Therefore, the proposed project would result in a less-than-significant impact related to solid waste regulations.

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<sup>48</sup> Waste Management, 2021. *Facility Overview*. Website: <https://kettlemanhillslandfill.wm.com/fact-sheets/2011/facility-overview.jsp> (accessed March 2023).

<sup>49</sup> Waste Management, 2019. *Facility Expansion*. Website: [kettlemanhillslandfill.wm.com/facility-expansion/index.jsp](https://kettlemanhillslandfill.wm.com/facility-expansion/index.jsp) (accessed March 2023).

**4.20 WILDFIRE**

|                                                                                                                                                                                                                                                                    | Potentially<br>Significant<br>Impact | Less Than<br>Significant with<br>Mitigation<br>Incorporated | Less Than<br>Significant<br>Impact  | No<br>Impact             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------------------------|-------------------------------------|--------------------------|
| If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:                                                                                                                                   |                                      |                                                             |                                     |                          |
| a. Substantially impair an adopted emergency response plan or emergency evacuation plan?                                                                                                                                                                           | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?                                                        | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment? | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?                                                                            | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**a. Would the project substantially impair an adopted emergency response plan or emergency evacuation plan?**

Wildland fires occur in geographic areas that contain the types and conditions of vegetation, topography, weather, and structure density susceptible to risks associated with uncontrolled fires that can be started by lightning, improperly managed campfires, cigarettes, sparks from automobiles, and other ignition sources. According to the California Department of Forestry and Fire Protection (CAL FIRE) Very High Fire Hazard Severity Zone (VHFHSZ) Map for Kings County, the project site is not located within a High or Very High Fire Hazard Severity Zone.

The proposed project consists of a mixed-use development on an infill site within the City. As a result, project implementation would not physically interfere with evacuation plans or the City Fire Department access to and from the project site. In addition, the proposed project's site plan would be subject to review and approval by the City Fire Department to ensure the project includes adequate emergency access. Moreover, since the project site is not located in or near a VHFHSZ nor is it located in or near a State Responsibility Area (SRA), potential impacts associated with emergency access described above would not pertain to wildfire and would more likely be associated with an urban fire or other emergency situations. Therefore, operation of the proposed project would not substantially impair an adopted emergency response plan or emergency evacuation plan. This impact would be less than significant and no mitigation would be required.



- b. Would the project, due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?*

As stated previously, the project site is not located in or near a VHFHSZ nor is it located in or near a SRA. Therefore, the proposed project would not exacerbate wildfire risks due to slope and prevailing winds, thereby exposing project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. This impact would be less and significant, and no mitigation would be required.

- c. Would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?*

Utility and infrastructure improvements included as part of the project are described in Section 2.0, Project Description. These improvements would include the installation of water, sanitary sewer, storm water drainage, electricity, natural gas, and telecommunications infrastructure. The project would also include new internal roads and would realign Glendale Avenue at the northwest corner of the Hanford Veterinary Hospital development.

The project site is not located in or near a VHFHSZ nor is it located in or near a SRA. Utility installations and internal roads would not exacerbate fire risk due to the location of the project site in an urban area outside of a designated fire hazard zone. Therefore, the proposed project would not require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that would exacerbate fire risk or result in temporary or ongoing impacts to the environment. This impact would be less and significant, and no mitigation would be required.

- d. Would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?*

Landslides and other forms of mass wasting, including mud flows, debris flows, and soil slips, occur as soil moves downslope under the influence of gravity. Landslides are frequently triggered by intense rainfall or seismic shaking but can also occur as a result of erosion and downslope runoff caused by rain following a fire. As previously discussed in Response 4.7.a, Hanford is located in a stable geologic formation, so the effects of ground shaking on soil stability should be minimal. In addition, the project site is generally level and would not expose people or structures to potential substantial adverse effects associated with landslides. Further, as stated previously, the project site is not located in or near a VHFHSZ nor is it located in or near a SRA. Therefore, the proposed project would not expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. This impact would be less than significant, and no mitigation would be required.

#### 4.21 MANDATORY FINDINGS OF SIGNIFICANCE

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Potentially<br>Significant<br>Impact | Less Than<br>Significant with<br>Mitigation<br>Incorporated | Less Than<br>Significant<br>Impact | No<br>Impact             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------------------------|------------------------------------|--------------------------|
| a. Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory? | <input type="checkbox"/>             | <input checked="" type="checkbox"/>                         | <input type="checkbox"/>           | <input type="checkbox"/> |
| b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)                                                                                                                                       | <input type="checkbox"/>             | <input checked="" type="checkbox"/>                         | <input type="checkbox"/>           | <input type="checkbox"/> |
| c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?                                                                                                                                                                                                                                                                                                                                          | <input type="checkbox"/>             | <input checked="" type="checkbox"/>                         | <input type="checkbox"/>           | <input type="checkbox"/> |

- a. Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?*

Implementation of Mitigation Measures CULT-1, CULT-2, CULT-3, CULT-4, and GEO-2 would ensure that potential impacts to historic, archaeological, tribal and paleontological resources that could be uncovered during construction activities would be reduced to a less-than-significant level. Implementation of Mitigation Measures BIO-1 through BIO-5 would ensure that potential impacts to special-status species and modifications to Peoples Ditch would be reduced to a less-than-significant level. Therefore, with the incorporation of mitigation measures, development of the proposed project would not: (1) degrade the quality of the environment; (2) substantially reduce the habitat of a fish or wildlife species; (3) cause a fish or wildlife species population to drop below self-sustaining levels; (4) threaten to eliminate a plant or animal community; (5) reduce the number or restrict the range of a rare or endangered plant or animal; or (6) eliminate important examples of the major periods of California history.

- b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?*

The proposed project's impacts would be individually limited and not cumulatively considerable. The potentially significant impacts that can be reduced to a less-than-significant level with implementation

of recommended mitigation measures include the topics of biological resources, cultural resources, geology and soils, hydrology and water quality, and noise. For the topic of biological resources, implementation of Mitigation Measures BIO-1 through BIO-5 would ensure that impacts related to special status-species and modification of the Peoples Ditch are reduced to a less-than-significant level. For the topic of cultural resources, potentially significant impacts to archaeological resources would be reduced to less-than-significant levels with implementation of Mitigation Measures CULT-1 and CULT-2 and Mitigation Measures CULT-3 and CULT-4 would reduce potential impacts to human remains to a less than significant level. For the topic of geology and soils, potentially significant impacts related to soil erosion during construction would be reduced to less-than-significant levels with implementation of Mitigation Measure GEO-1 and potentially significant impacts related to paleontological resources would be reduced to less-than-significant levels with implementation of Mitigation Measure GEO-2. For the topic of hydrology and water quality, implementation of Mitigation Measures HYDRO-1 and HYDRO-2 would ensure that potential water quality impacts are reduced to a less-than-significant level. For the topic of noise, impacts would be reduced to a less-than-significant level with implementation of Mitigation Measures NOI-1 through NOI-4.

For the topics of aesthetics, air quality, agricultural and forestry resources, energy, greenhouse gas emissions, hazards and hazardous materials, land use and planning, mineral resources, population and housing, public services, recreation, transportation, tribal cultural resources, utilities and service systems, and wildfire, the project would have no impacts or less-than-significant impacts, and therefore, the project would not substantially contribute to any potential cumulative impacts for these topics. All environmental impacts that could occur as a result of the proposed project would be reduced to a less-than-significant level through the implementation of the mitigation measures recommended in this document.

Implementation of these measures would ensure that the impacts of the project would be below established thresholds of significance and that these impacts would not combine with the impacts of other cumulative projects to result in a cumulatively considerable impact on the environment as a result of project development. Therefore, this impact would be less than significant.

*c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?*

The proposed project would not result in any environmental effects that would cause substantial direct or indirect adverse effects to human beings.

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## APPENDIX A

### CALEEMOD OUTPUTS

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# Hanford Place Project Custom Report

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# 1. Basic Project Information

## 1.1. Basic Project Information

| Data Field                  | Value                                  |
|-----------------------------|----------------------------------------|
| Project Name                | Hanford Place Project                  |
| Lead Agency                 | —                                      |
| Land Use Scale              | Project/site                           |
| Analysis Level for Defaults | County                                 |
| Windspeed (m/s)             | 2.40                                   |
| Precipitation (days)        | 23.0                                   |
| Location                    | 36.32149538375269, -119.66421703413741 |
| County                      | Kings                                  |
| City                        | Hanford                                |
| Air District                | San Joaquin Valley APCD                |
| Air Basin                   | San Joaquin Valley                     |
| TAZ                         | 2627                                   |
| EDFZ                        | 9                                      |
| Electric Utility            | Southern California Edison             |
| Gas Utility                 | Southern California Gas                |

## 1.2. Land Use Types

| Land Use Subtype        | Size | Unit     | Lot Acreage | Building Area (sq ft) | Landscape Area (sq ft) | Special Landscape Area (sq ft) | Population | Description |
|-------------------------|------|----------|-------------|-----------------------|------------------------|--------------------------------|------------|-------------|
| Medical Office Building | 72.3 | 1000sqft | 3.09        | 72,305                | 0.00                   | —                              | —          | —           |
| Hotel                   | 105  | Room     | 4.15        | 100,000               | 0.00                   | —                              | —          | —           |
| Junior College (2yr)    | 35.0 | 1000sqft | 0.95        | 35,000                | 0.00                   | 0.00                           | —          | —           |

|                                   |       |               |      |         |         |   |     |   |
|-----------------------------------|-------|---------------|------|---------|---------|---|-----|---|
| Congregate Care (Assisted Living) | 139   | Dwelling Unit | 4.76 | 123,471 | 0.00    | — | 431 | — |
| Apartments Mid Rise               | 90.0  | Dwelling Unit | 3.55 | 76,500  | 0.00    | — | 279 | — |
| Other Non-Asphalt Surfaces        | 5.00  | Acre          | 6.00 | 0.00    | 0.00    | — | —   | — |
| Parking Lot                       | 1,466 | Space         | 15.6 | 0.00    | 170,755 | — | —   | — |
| Strip Mall                        | 41.5  | 1000sqft      | 2.00 | 41,500  | 0.00    | — | —   | — |

### 1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

## 2. Emissions Summary

### 2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Un/Mit.             | ROG  | NOx  | CO   | SO2  | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2  | CO2T   | CH4  | N2O  | CO2e   |
|---------------------|------|------|------|------|-------|-------|-------|--------|--------|--------|------|--------|--------|------|------|--------|
| Daily, Summer (Max) | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —      | —      | —    | —    | —      |
| Unmit.              | 2.01 | 59.4 | 38.8 | 0.12 | 1.53  | 7.79  | 8.91  | 1.40   | 3.97   | 4.99   | —    | 15,564 | 15,564 | 0.35 | 1.42 | 16,019 |
| Daily, Winter (Max) | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —      | —      | —    | —    | —      |
| Unmit.              | 53.6 | 39.9 | 29.0 | 0.05 | 1.12  | 7.79  | 8.91  | 1.02   | 3.97   | 4.99   | —    | 5,431  | 5,431  | 0.24 | 0.22 | 5,451  |
| Average Daily (Max) | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —      | —      | —    | —    | —      |
| Unmit.              | 6.71 | 20.3 | 18.1 | 0.03 | 0.58  | 2.26  | 2.84  | 0.53   | 0.79   | 1.33   | —    | 4,820  | 4,820  | 0.16 | 0.31 | 4,920  |
| Annual (Max)        | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —      | —      | —    | —    | —      |
| Unmit.              | 1.22 | 3.70 | 3.31 | 0.01 | 0.11  | 0.41  | 0.52  | 0.10   | 0.15   | 0.24   | —    | 798    | 798    | 0.03 | 0.05 | 815    |



## 2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Year                 | ROG  | NOx  | CO   | SO2     | PM10E   | PM10D | PM10T | PM2.5E  | PM2.5D  | PM2.5T  | BCO2 | NBCO2  | CO2T   | CH4     | N2O     | CO2e   |
|----------------------|------|------|------|---------|---------|-------|-------|---------|---------|---------|------|--------|--------|---------|---------|--------|
| Daily - Summer (Max) | —    | —    | —    | —       | —       | —     | —     | —       | —       | —       | —    | —      | —      | —       | —       | —      |
| 2024                 | 2.01 | 59.4 | 38.8 | 0.12    | 1.53    | 7.79  | 8.91  | 1.40    | 3.97    | 4.99    | —    | 15,564 | 15,564 | 0.35    | 1.42    | 16,019 |
| 2025                 | 1.93 | 21.0 | 28.1 | 0.03    | 0.70    | 2.06  | 2.76  | 0.65    | 0.51    | 1.16    | —    | 5,373  | 5,373  | 0.22    | 0.21    | 5,450  |
| 2026                 | 1.77 | 20.9 | 27.0 | 0.03    | 0.70    | 2.06  | 2.76  | 0.65    | 0.51    | 1.16    | —    | 5,311  | 5,311  | 0.22    | 0.20    | 5,386  |
| Daily - Winter (Max) | —    | —    | —    | —       | —       | —     | —     | —       | —       | —       | —    | —      | —      | —       | —       | —      |
| 2024                 | 1.84 | 39.9 | 29.0 | 0.05    | 1.12    | 7.79  | 8.91  | 1.02    | 3.97    | 4.99    | —    | 5,431  | 5,431  | 0.24    | 0.22    | 5,451  |
| 2025                 | 1.71 | 21.3 | 25.0 | 0.03    | 0.70    | 2.06  | 2.76  | 0.65    | 0.51    | 1.16    | —    | 5,122  | 5,122  | 0.24    | 0.21    | 5,190  |
| 2026                 | 53.6 | 21.2 | 24.1 | 0.03    | 0.70    | 2.06  | 2.76  | 0.65    | 0.51    | 1.16    | —    | 5,066  | 5,066  | 0.17    | 0.21    | 5,133  |
| 2027                 | 53.6 | 1.26 | 2.65 | < 0.005 | 0.07    | 0.37  | 0.44  | 0.06    | 0.09    | 0.15    | —    | 509    | 509    | 0.02    | 0.02    | 515    |
| Average Daily        | —    | —    | —    | —       | —       | —     | —     | —       | —       | —       | —    | —      | —      | —       | —       | —      |
| 2024                 | 1.01 | 20.3 | 17.8 | 0.03    | 0.58    | 2.26  | 2.84  | 0.53    | 0.79    | 1.33    | —    | 4,820  | 4,820  | 0.16    | 0.31    | 4,920  |
| 2025                 | 1.23 | 15.1 | 18.1 | 0.02    | 0.50    | 1.45  | 1.95  | 0.47    | 0.36    | 0.82    | —    | 3,709  | 3,709  | 0.16    | 0.15    | 3,761  |
| 2026                 | 1.54 | 13.7 | 15.4 | 0.02    | 0.47    | 1.17  | 1.64  | 0.44    | 0.29    | 0.73    | —    | 3,131  | 3,131  | 0.10    | 0.12    | 3,172  |
| 2027                 | 6.71 | 0.16 | 0.34 | < 0.005 | 0.01    | 0.05  | 0.05  | 0.01    | 0.01    | 0.02    | —    | 65.5   | 65.5   | < 0.005 | < 0.005 | 66.2   |
| Annual               | —    | —    | —    | —       | —       | —     | —     | —       | —       | —       | —    | —      | —      | —       | —       | —      |
| 2024                 | 0.18 | 3.70 | 3.25 | 0.01    | 0.11    | 0.41  | 0.52  | 0.10    | 0.15    | 0.24    | —    | 798    | 798    | 0.03    | 0.05    | 815    |
| 2025                 | 0.23 | 2.76 | 3.31 | < 0.005 | 0.09    | 0.26  | 0.36  | 0.08    | 0.06    | 0.15    | —    | 614    | 614    | 0.03    | 0.02    | 623    |
| 2026                 | 0.28 | 2.51 | 2.81 | < 0.005 | 0.09    | 0.21  | 0.30  | 0.08    | 0.05    | 0.13    | —    | 518    | 518    | 0.02    | 0.02    | 525    |
| 2027                 | 1.22 | 0.03 | 0.06 | < 0.005 | < 0.005 | 0.01  | 0.01  | < 0.005 | < 0.005 | < 0.005 | —    | 10.8   | 10.8   | < 0.005 | < 0.005 | 11.0   |

## 2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Un/Mit.             | ROG  | NOx  | CO   | SO2  | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2  | NBCO2  | CO2T   | CH4  | N2O  | CO2e   |
|---------------------|------|------|------|------|-------|-------|-------|--------|--------|--------|-------|--------|--------|------|------|--------|
| Daily, Summer (Max) | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —     | —      | —      | —    | —    | —      |
| Unmit.              | 37.3 | 19.1 | 165  | 0.40 | 7.96  | 5.91  | 13.9  | 7.69   | 1.04   | 8.73   | 2,041 | 34,390 | 36,431 | 87.5 | 1.39 | 39,252 |
| Daily, Winter (Max) | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —     | —      | —      | —    | —    | —      |
| Unmit.              | 32.1 | 20.5 | 138  | 0.38 | 7.94  | 5.91  | 13.9  | 7.66   | 1.04   | 8.70   | 2,041 | 32,764 | 34,806 | 87.7 | 1.47 | 37,598 |
| Average Daily (Max) | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —     | —      | —      | —    | —    | —      |
| Unmit.              | 29.4 | 17.7 | 105  | 0.25 | 2.11  | 5.91  | 8.02  | 2.05   | 1.04   | 3.09   | 1,076 | 31,371 | 32,447 | 83.0 | 1.42 | 35,132 |
| Annual (Max)        | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —     | —      | —      | —    | —    | —      |
| Unmit.              | 5.37 | 3.22 | 19.2 | 0.05 | 0.39  | 1.08  | 1.46  | 0.37   | 0.19   | 0.56   | 178   | 5,194  | 5,372  | 13.7 | 0.24 | 5,817  |

## 2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Sector              | ROG  | NOx  | CO   | SO2  | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2  | NBCO2  | CO2T   | CH4  | N2O  | CO2e   |
|---------------------|------|------|------|------|-------|-------|-------|--------|--------|--------|-------|--------|--------|------|------|--------|
| Daily, Summer (Max) | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —     | —      | —      | —    | —    | —      |
| Mobile              | 18.0 | 13.0 | 86.4 | 0.20 | 0.18  | 5.91  | 6.08  | 0.17   | 1.04   | 1.21   | —     | 20,234 | 20,234 | 1.02 | 1.20 | 20,676 |
| Area                | 19.1 | 2.96 | 76.3 | 0.18 | 7.55  | —     | 7.55  | 7.28   | —      | 7.28   | 1,245 | 2,490  | 3,735  | 5.87 | 0.01 | 3,883  |
| Energy              | 0.17 | 3.05 | 2.13 | 0.02 | 0.24  | —     | 0.24  | 0.24   | —      | 0.24   | —     | 11,510 | 11,510 | 0.81 | 0.07 | 11,550 |
| Water               | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | 48.8  | 156    | 205    | 5.01 | 0.12 | 366    |
| Waste               | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | 748   | 0.00   | 748    | 74.7 | 0.00 | 2,616  |

|                           |      |      |      |         |      |      |      |      |      |      |       |        |        |      |         |        |
|---------------------------|------|------|------|---------|------|------|------|------|------|------|-------|--------|--------|------|---------|--------|
| Refrig.                   | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | —     | —      | —      | —    | —       | 161    |
| Total                     | 37.3 | 19.1 | 165  | 0.40    | 7.96 | 5.91 | 13.9 | 7.69 | 1.04 | 8.73 | 2,041 | 34,390 | 36,431 | 87.5 | 1.39    | 39,252 |
| Daily,<br>Winter<br>(Max) | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | —     | —      | —      | —    | —       | —      |
| Mobile                    | 15.8 | 14.8 | 83.6 | 0.18    | 0.18 | 5.91 | 6.08 | 0.17 | 1.04 | 1.21 | —     | 18,687 | 18,687 | 1.24 | 1.28    | 19,102 |
| Area                      | 16.2 | 2.74 | 52.5 | 0.18    | 7.53 | —    | 7.53 | 7.26 | —    | 7.26 | 1,245 | 2,411  | 3,655  | 5.86 | < 0.005 | 3,803  |
| Energy                    | 0.17 | 3.05 | 2.13 | 0.02    | 0.24 | —    | 0.24 | 0.24 | —    | 0.24 | —     | 11,510 | 11,510 | 0.81 | 0.07    | 11,550 |
| Water                     | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | 48.8  | 156    | 205    | 5.01 | 0.12    | 366    |
| Waste                     | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | 748   | 0.00   | 748    | 74.7 | 0.00    | 2,616  |
| Refrig.                   | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | —     | —      | —      | —    | —       | 161    |
| Total                     | 32.1 | 20.5 | 138  | 0.38    | 7.94 | 5.91 | 13.9 | 7.66 | 1.04 | 8.70 | 2,041 | 32,764 | 34,806 | 87.7 | 1.47    | 37,598 |
| Average<br>Daily          | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | —     | —      | —      | —    | —       | —      |
| Mobile                    | 16.1 | 13.9 | 79.5 | 0.19    | 0.18 | 5.91 | 6.08 | 0.17 | 1.04 | 1.21 | —     | 19,124 | 19,124 | 1.12 | 1.24    | 19,546 |
| Area                      | 13.2 | 0.72 | 23.5 | 0.04    | 1.70 | —    | 1.70 | 1.64 | —    | 1.64 | 280   | 581    | 860    | 1.32 | < 0.005 | 894    |
| Energy                    | 0.17 | 3.05 | 2.13 | 0.02    | 0.24 | —    | 0.24 | 0.24 | —    | 0.24 | —     | 11,510 | 11,510 | 0.81 | 0.07    | 11,550 |
| Water                     | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | 48.8  | 156    | 205    | 5.01 | 0.12    | 366    |
| Waste                     | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | 748   | 0.00   | 748    | 74.7 | 0.00    | 2,616  |
| Refrig.                   | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | —     | —      | —      | —    | —       | 161    |
| Total                     | 29.4 | 17.7 | 105  | 0.25    | 2.11 | 5.91 | 8.02 | 2.05 | 1.04 | 3.09 | 1,076 | 31,371 | 32,447 | 83.0 | 1.42    | 35,132 |
| Annual                    | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | —     | —      | —      | —    | —       | —      |
| Mobile                    | 2.93 | 2.53 | 14.5 | 0.03    | 0.03 | 1.08 | 1.11 | 0.03 | 0.19 | 0.22 | —     | 3,166  | 3,166  | 0.19 | 0.20    | 3,236  |
| Area                      | 2.40 | 0.13 | 4.30 | 0.01    | 0.31 | —    | 0.31 | 0.30 | —    | 0.30 | 46.3  | 96.1   | 142    | 0.22 | < 0.005 | 148    |
| Energy                    | 0.03 | 0.56 | 0.39 | < 0.005 | 0.04 | —    | 0.04 | 0.04 | —    | 0.04 | —     | 1,906  | 1,906  | 0.13 | 0.01    | 1,912  |
| Water                     | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | 8.08  | 25.8   | 33.9   | 0.83 | 0.02    | 60.6   |
| Waste                     | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | 124   | 0.00   | 124    | 12.4 | 0.00    | 433    |
| Refrig.                   | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | —     | —      | —      | —    | —       | 26.6   |
| Total                     | 5.37 | 3.22 | 19.2 | 0.05    | 0.39 | 1.08 | 1.46 | 0.37 | 0.19 | 0.56 | 178   | 5,194  | 5,372  | 13.7 | 0.24    | 5,817  |

### 3. Construction Emissions Details

#### 3.1. Site Preparation (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | ROG  | NOx  | CO   | SO2     | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T  | CH4  | N2O     | CO2e  |
|-----------------------------|------|------|------|---------|-------|-------|-------|--------|--------|--------|------|-------|-------|------|---------|-------|
| Onsite                      | —    | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —       | —     |
| Daily, Summer (Max)         | —    | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —       | —     |
| Off-Road Equipment          | 1.07 | 39.9 | 28.3 | 0.05    | 1.12  | —     | 1.12  | 1.02   | —      | 1.02   | —    | 5,296 | 5,296 | 0.21 | 0.04    | 5,314 |
| Dust From Material Movement | —    | —    | —    | —       | —     | 7.67  | 7.67  | —      | 3.94   | 3.94   | —    | —     | —     | —    | —       | —     |
| Onsite truck                | 0.00 | 0.00 | 0.00 | 0.00    | 0.00  | 0.00  | 0.00  | 0.00   | 0.00   | 0.00   | —    | 0.00  | 0.00  | 0.00 | 0.00    | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —       | —     |
| Off-Road Equipment          | 1.07 | 39.9 | 28.3 | 0.05    | 1.12  | —     | 1.12  | 1.02   | —      | 1.02   | —    | 5,296 | 5,296 | 0.21 | 0.04    | 5,314 |
| Dust From Material Movement | —    | —    | —    | —       | —     | 7.67  | 7.67  | —      | 3.94   | 3.94   | —    | —     | —     | —    | —       | —     |
| Onsite truck                | 0.00 | 0.00 | 0.00 | 0.00    | 0.00  | 0.00  | 0.00  | 0.00   | 0.00   | 0.00   | —    | 0.00  | 0.00  | 0.00 | 0.00    | 0.00  |
| Average Daily               | —    | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —       | —     |
| Off-Road Equipment          | 0.07 | 2.73 | 1.94 | < 0.005 | 0.08  | —     | 0.08  | 0.07   | —      | 0.07   | —    | 363   | 363   | 0.01 | < 0.005 | 364   |
| Dust From Material Movement | —    | —    | —    | —       | —     | 0.53  | 0.53  | —      | 0.27   | 0.27   | —    | —     | —     | —    | —       | —     |

|                             |         |         |      |         |      |         |         |      |         |         |   |      |      |         |         |      |
|-----------------------------|---------|---------|------|---------|------|---------|---------|------|---------|---------|---|------|------|---------|---------|------|
| Onsite truck                | 0.00    | 0.00    | 0.00 | 0.00    | 0.00 | 0.00    | 0.00    | 0.00 | 0.00    | 0.00    | — | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 |
| Annual                      | —       | —       | —    | —       | —    | —       | —       | —    | —       | —       | — | —    | —    | —       | —       | —    |
| Off-Road Equipment          | 0.01    | 0.50    | 0.35 | < 0.005 | 0.01 | —       | 0.01    | 0.01 | —       | 0.01    | — | 60.1 | 60.1 | < 0.005 | < 0.005 | 60.3 |
| Dust From Material Movement | —       | —       | —    | —       | —    | 0.10    | 0.10    | —    | 0.05    | 0.05    | — | —    | —    | —       | —       | —    |
| Onsite truck                | 0.00    | 0.00    | 0.00 | 0.00    | 0.00 | 0.00    | 0.00    | 0.00 | 0.00    | 0.00    | — | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 |
| Offsite                     | —       | —       | —    | —       | —    | —       | —       | —    | —       | —       | — | —    | —    | —       | —       | —    |
| Daily, Summer (Max)         | —       | —       | —    | —       | —    | —       | —       | —    | —       | —       | — | —    | —    | —       | —       | —    |
| Worker                      | 0.09    | 0.06    | 0.97 | 0.00    | 0.00 | 0.13    | 0.13    | 0.00 | 0.03    | 0.03    | — | 153  | 153  | 0.01    | 0.01    | 156  |
| Vendor                      | 0.00    | 0.00    | 0.00 | 0.00    | 0.00 | 0.00    | 0.00    | 0.00 | 0.00    | 0.00    | — | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 |
| Hauling                     | 0.00    | 0.00    | 0.00 | 0.00    | 0.00 | 0.00    | 0.00    | 0.00 | 0.00    | 0.00    | — | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 |
| Daily, Winter (Max)         | —       | —       | —    | —       | —    | —       | —       | —    | —       | —       | — | —    | —    | —       | —       | —    |
| Worker                      | 0.08    | 0.08    | 0.74 | 0.00    | 0.00 | 0.13    | 0.13    | 0.00 | 0.03    | 0.03    | — | 136  | 136  | 0.01    | 0.01    | 138  |
| Vendor                      | 0.00    | 0.00    | 0.00 | 0.00    | 0.00 | 0.00    | 0.00    | 0.00 | 0.00    | 0.00    | — | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 |
| Hauling                     | 0.00    | 0.00    | 0.00 | 0.00    | 0.00 | 0.00    | 0.00    | 0.00 | 0.00    | 0.00    | — | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 |
| Average Daily               | —       | —       | —    | —       | —    | —       | —       | —    | —       | —       | — | —    | —    | —       | —       | —    |
| Worker                      | 0.01    | < 0.005 | 0.05 | 0.00    | 0.00 | 0.01    | 0.01    | 0.00 | < 0.005 | < 0.005 | — | 9.64 | 9.64 | < 0.005 | < 0.005 | 9.78 |
| Vendor                      | 0.00    | 0.00    | 0.00 | 0.00    | 0.00 | 0.00    | 0.00    | 0.00 | 0.00    | 0.00    | — | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 |
| Hauling                     | 0.00    | 0.00    | 0.00 | 0.00    | 0.00 | 0.00    | 0.00    | 0.00 | 0.00    | 0.00    | — | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 |
| Annual                      | —       | —       | —    | —       | —    | —       | —       | —    | —       | —       | — | —    | —    | —       | —       | —    |
| Worker                      | < 0.005 | < 0.005 | 0.01 | 0.00    | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | — | 1.60 | 1.60 | < 0.005 | < 0.005 | 1.62 |
| Vendor                      | 0.00    | 0.00    | 0.00 | 0.00    | 0.00 | 0.00    | 0.00    | 0.00 | 0.00    | 0.00    | — | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 |

|         |      |      |      |      |      |      |      |      |      |      |   |      |      |      |      |      |
|---------|------|------|------|------|------|------|------|------|------|------|---|------|------|------|------|------|
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|---------|------|------|------|------|------|------|------|------|------|------|---|------|------|------|------|------|

### 3.3. Grading (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | ROG  | NOx  | CO   | SO2     | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T  | CH4  | N2O     | CO2e  |
|-----------------------------|------|------|------|---------|-------|-------|-------|--------|--------|--------|------|-------|-------|------|---------|-------|
| Onsite                      | —    | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —       | —     |
| Daily, Summer (Max)         | —    | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —       | —     |
| Off-Road Equipment          | 1.33 | 48.8 | 35.3 | 0.06    | 1.36  | —     | 1.36  | 1.23   | —      | 1.23   | —    | 6,598 | 6,598 | 0.27 | 0.05    | 6,621 |
| Dust From Material Movement | —    | —    | —    | —       | —     | 3.61  | 3.61  | —      | 1.43   | 1.43   | —    | —     | —     | —    | —       | —     |
| Onsite truck                | 0.00 | 0.00 | 0.00 | 0.00    | 0.00  | 0.00  | 0.00  | 0.00   | 0.00   | 0.00   | —    | 0.00  | 0.00  | 0.00 | 0.00    | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —       | —     |
| Average Daily               | —    | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —       | —     |
| Off-Road Equipment          | 0.22 | 8.03 | 5.81 | 0.01    | 0.22  | —     | 0.22  | 0.20   | —      | 0.20   | —    | 1,085 | 1,085 | 0.04 | 0.01    | 1,088 |
| Dust From Material Movement | —    | —    | —    | —       | —     | 0.59  | 0.59  | —      | 0.23   | 0.23   | —    | —     | —     | —    | —       | —     |
| Onsite truck                | 0.00 | 0.00 | 0.00 | 0.00    | 0.00  | 0.00  | 0.00  | 0.00   | 0.00   | 0.00   | —    | 0.00  | 0.00  | 0.00 | 0.00    | 0.00  |
| Annual                      | —    | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —       | —     |
| Off-Road Equipment          | 0.04 | 1.47 | 1.06 | < 0.005 | 0.04  | —     | 0.04  | 0.04   | —      | 0.04   | —    | 180   | 180   | 0.01 | < 0.005 | 180   |

|                             |         |         |      |         |         |         |         |         |         |         |   |       |       |         |         |       |
|-----------------------------|---------|---------|------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|-------|
| Dust From Material Movement | —       | —       | —    | —       | —       | 0.11    | 0.11    | —       | 0.04    | 0.04    | — | —     | —     | —       | —       | —     |
| Onsite truck                | 0.00    | 0.00    | 0.00 | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | — | 0.00  | 0.00  | 0.00    | 0.00    | 0.00  |
| Offsite                     | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —     |
| Worker                      | 0.10    | 0.07    | 1.10 | 0.00    | 0.00    | 0.15    | 0.15    | 0.00    | 0.04    | 0.04    | — | 175   | 175   | 0.01    | 0.01    | 178   |
| Vendor                      | 0.00    | 0.00    | 0.00 | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | — | 0.00  | 0.00  | 0.00    | 0.00    | 0.00  |
| Hauling                     | 0.16    | 10.5    | 2.30 | 0.06    | 0.17    | 2.32    | 2.48    | 0.17    | 0.63    | 0.80    | — | 8,791 | 8,791 | 0.07    | 1.36    | 9,220 |
| Daily, Winter (Max)         | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —     |
| Average Daily               | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —     |
| Worker                      | 0.02    | 0.01    | 0.15 | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | 0.01    | 0.01    | — | 26.4  | 26.4  | < 0.005 | < 0.005 | 26.8  |
| Vendor                      | 0.00    | 0.00    | 0.00 | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | — | 0.00  | 0.00  | 0.00    | 0.00    | 0.00  |
| Hauling                     | 0.03    | 1.81    | 0.38 | 0.01    | 0.03    | 0.38    | 0.40    | 0.03    | 0.10    | 0.13    | — | 1,446 | 1,446 | 0.01    | 0.22    | 1,514 |
| Annual                      | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —     |
| Worker                      | < 0.005 | < 0.005 | 0.03 | 0.00    | 0.00    | < 0.005 | < 0.005 | 0.00    | < 0.005 | < 0.005 | — | 4.38  | 4.38  | < 0.005 | < 0.005 | 4.44  |
| Vendor                      | 0.00    | 0.00    | 0.00 | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | — | 0.00  | 0.00  | 0.00    | 0.00    | 0.00  |
| Hauling                     | < 0.005 | 0.33    | 0.07 | < 0.005 | < 0.005 | 0.07    | 0.07    | < 0.005 | 0.02    | 0.02    | — | 239   | 239   | < 0.005 | 0.04    | 251   |

### 3.5. Building Construction (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | CO2e |
|----------|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|------|
| Onsite   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |



|                     |      |      |      |         |      |      |      |      |      |      |   |       |       |      |         |       |
|---------------------|------|------|------|---------|------|------|------|------|------|------|---|-------|-------|------|---------|-------|
| Daily, Summer (Max) | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —    | —       | —     |
| Off-Road Equipment  | 0.62 | 18.9 | 14.3 | 0.02    | 0.69 | —    | 0.69 | 0.64 | —    | 0.64 | — | 2,398 | 2,398 | 0.10 | 0.02    | 2,406 |
| Onsite truck        | 0.00 | 0.00 | 0.00 | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00  | 0.00  | 0.00 | 0.00    | 0.00  |
| Daily, Winter (Max) | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —    | —       | —     |
| Off-Road Equipment  | 0.62 | 18.9 | 14.3 | 0.02    | 0.69 | —    | 0.69 | 0.64 | —    | 0.64 | — | 2,398 | 2,398 | 0.10 | 0.02    | 2,406 |
| Onsite truck        | 0.00 | 0.00 | 0.00 | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00  | 0.00  | 0.00 | 0.00    | 0.00  |
| Average Daily       | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —    | —       | —     |
| Off-Road Equipment  | 0.22 | 6.80 | 5.15 | 0.01    | 0.25 | —    | 0.25 | 0.23 | —    | 0.23 | — | 863   | 863   | 0.04 | 0.01    | 866   |
| Onsite truck        | 0.00 | 0.00 | 0.00 | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00  | 0.00  | 0.00 | 0.00    | 0.00  |
| Annual              | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —    | —       | —     |
| Off-Road Equipment  | 0.04 | 1.24 | 0.94 | < 0.005 | 0.05 | —    | 0.05 | 0.04 | —    | 0.04 | — | 143   | 143   | 0.01 | < 0.005 | 143   |
| Onsite truck        | 0.00 | 0.00 | 0.00 | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00  | 0.00  | 0.00 | 0.00    | 0.00  |
| Offsite             | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —    | —       | —     |
| Daily, Summer (Max) | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —    | —       | —     |
| Worker              | 1.34 | 0.93 | 14.3 | 0.00    | 0.00 | 1.87 | 1.87 | 0.00 | 0.45 | 0.45 | — | 2,260 | 2,260 | 0.11 | 0.08    | 2,296 |
| Vendor              | 0.06 | 1.36 | 0.67 | 0.01    | 0.01 | 0.19 | 0.20 | 0.01 | 0.05 | 0.06 | — | 778   | 778   | 0.01 | 0.11    | 814   |
| Hauling             | 0.00 | 0.00 | 0.00 | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00  | 0.00  | 0.00 | 0.00    | 0.00  |

|                     |         |      |      |         |         |      |      |         |         |         |   |       |       |         |         |       |
|---------------------|---------|------|------|---------|---------|------|------|---------|---------|---------|---|-------|-------|---------|---------|-------|
| Daily, Winter (Max) | —       | —    | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —     |
| Worker              | 1.17    | 1.15 | 10.9 | 0.00    | 0.00    | 1.87 | 1.87 | 0.00    | 0.45    | 0.45    | — | 2,000 | 2,000 | 0.13    | 0.08    | 2,028 |
| Vendor              | 0.05    | 1.44 | 0.70 | 0.01    | 0.01    | 0.19 | 0.20 | 0.01    | 0.05    | 0.06    | — | 780   | 780   | 0.01    | 0.11    | 814   |
| Hauling             | 0.00    | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 | 0.00 | 0.00    | 0.00    | 0.00    | — | 0.00  | 0.00  | 0.00    | 0.00    | 0.00  |
| Average Daily       | —       | —    | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —     |
| Worker              | 0.43    | 0.38 | 4.10 | 0.00    | 0.00    | 0.66 | 0.66 | 0.00    | 0.16    | 0.16    | — | 747   | 747   | 0.04    | 0.03    | 758   |
| Vendor              | 0.02    | 0.50 | 0.25 | < 0.005 | < 0.005 | 0.07 | 0.07 | < 0.005 | 0.02    | 0.02    | — | 280   | 280   | < 0.005 | 0.04    | 293   |
| Hauling             | 0.00    | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 | 0.00 | 0.00    | 0.00    | 0.00    | — | 0.00  | 0.00  | 0.00    | 0.00    | 0.00  |
| Annual              | —       | —    | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —     |
| Worker              | 0.08    | 0.07 | 0.75 | 0.00    | 0.00    | 0.12 | 0.12 | 0.00    | 0.03    | 0.03    | — | 124   | 124   | 0.01    | < 0.005 | 126   |
| Vendor              | < 0.005 | 0.09 | 0.04 | < 0.005 | < 0.005 | 0.01 | 0.01 | < 0.005 | < 0.005 | < 0.005 | — | 46.4  | 46.4  | < 0.005 | 0.01    | 48.5  |
| Hauling             | 0.00    | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 | 0.00 | 0.00    | 0.00    | 0.00    | — | 0.00  | 0.00  | 0.00    | 0.00    | 0.00  |

### 3.7. Building Construction (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | ROG  | NOx  | CO   | SO2  | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | CO2e  |
|---------------------|------|------|------|------|-------|-------|-------|--------|--------|--------|------|-------|-------|------|------|-------|
| Onsite              | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —     |
| Daily, Summer (Max) | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —     |
| Off-Road Equipment  | 0.62 | 18.9 | 14.3 | 0.02 | 0.69  | —     | 0.69  | 0.64   | —      | 0.64   | —    | 2,398 | 2,398 | 0.10 | 0.02 | 2,406 |
| Onsite truck        | 0.00 | 0.00 | 0.00 | 0.00 | 0.00  | 0.00  | 0.00  | 0.00   | 0.00   | 0.00   | —    | 0.00  | 0.00  | 0.00 | 0.00 | 0.00  |
| Daily, Winter (Max) | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —     |

|                     |      |      |      |         |      |      |      |      |      |      |   |       |       |      |         |       |
|---------------------|------|------|------|---------|------|------|------|------|------|------|---|-------|-------|------|---------|-------|
| Off-Road Equipment  | 0.62 | 18.9 | 14.3 | 0.02    | 0.69 | —    | 0.69 | 0.64 | —    | 0.64 | — | 2,398 | 2,398 | 0.10 | 0.02    | 2,406 |
| Onsite truck        | 0.00 | 0.00 | 0.00 | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00  | 0.00  | 0.00 | 0.00    | 0.00  |
| Average Daily       | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —    | —       | —     |
| Off-Road Equipment  | 0.44 | 13.5 | 10.2 | 0.02    | 0.49 | —    | 0.49 | 0.46 | —    | 0.46 | — | 1,713 | 1,713 | 0.07 | 0.01    | 1,719 |
| Onsite truck        | 0.00 | 0.00 | 0.00 | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00  | 0.00  | 0.00 | 0.00    | 0.00  |
| Annual              | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —    | —       | —     |
| Off-Road Equipment  | 0.08 | 2.46 | 1.86 | < 0.005 | 0.09 | —    | 0.09 | 0.08 | —    | 0.08 | — | 284   | 284   | 0.01 | < 0.005 | 285   |
| Onsite truck        | 0.00 | 0.00 | 0.00 | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00  | 0.00  | 0.00 | 0.00    | 0.00  |
| Offsite             | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —    | —       | —     |
| Daily, Summer (Max) | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —    | —       | —     |
| Worker              | 1.26 | 0.86 | 13.1 | 0.00    | 0.00 | 1.87 | 1.87 | 0.00 | 0.45 | 0.45 | — | 2,211 | 2,211 | 0.11 | 0.08    | 2,246 |
| Vendor              | 0.05 | 1.31 | 0.65 | 0.01    | 0.01 | 0.19 | 0.20 | 0.01 | 0.05 | 0.06 | — | 764   | 764   | 0.01 | 0.11    | 799   |
| Hauling             | 0.00 | 0.00 | 0.00 | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00  | 0.00  | 0.00 | 0.00    | 0.00  |
| Daily, Winter (Max) | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —    | —       | —     |
| Worker              | 1.04 | 1.07 | 10.0 | 0.00    | 0.00 | 1.87 | 1.87 | 0.00 | 0.45 | 0.45 | — | 1,958 | 1,958 | 0.13 | 0.08    | 1,986 |
| Vendor              | 0.04 | 1.39 | 0.68 | 0.01    | 0.01 | 0.19 | 0.20 | 0.01 | 0.05 | 0.06 | — | 766   | 766   | 0.01 | 0.11    | 798   |
| Hauling             | 0.00 | 0.00 | 0.00 | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00  | 0.00  | 0.00 | 0.00    | 0.00  |
| Average Daily       | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —    | —       | —     |
| Worker              | 0.76 | 0.66 | 7.46 | 0.00    | 0.00 | 1.32 | 1.32 | 0.00 | 0.32 | 0.32 | — | 1,450 | 1,450 | 0.08 | 0.06    | 1,472 |
| Vendor              | 0.03 | 0.97 | 0.47 | < 0.005 | 0.01 | 0.14 | 0.14 | 0.01 | 0.04 | 0.04 | — | 546   | 546   | 0.01 | 0.08    | 570   |

|         |      |      |      |         |         |      |      |         |      |      |   |      |      |         |      |      |
|---------|------|------|------|---------|---------|------|------|---------|------|------|---|------|------|---------|------|------|
| Hauling | 0.00 | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 | 0.00 | 0.00    | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00    | 0.00 | 0.00 |
| Annual  | —    | —    | —    | —       | —       | —    | —    | —       | —    | —    | — | —    | —    | —       | —    | —    |
| Worker  | 0.14 | 0.12 | 1.36 | 0.00    | 0.00    | 0.24 | 0.24 | 0.00    | 0.06 | 0.06 | — | 240  | 240  | 0.01    | 0.01 | 244  |
| Vendor  | 0.01 | 0.18 | 0.09 | < 0.005 | < 0.005 | 0.02 | 0.03 | < 0.005 | 0.01 | 0.01 | — | 90.5 | 90.5 | < 0.005 | 0.01 | 94.4 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 | 0.00 | 0.00    | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00    | 0.00 | 0.00 |

### 3.9. Building Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | CO2e  |
|---------------------------|------|------|------|------|-------|-------|-------|--------|--------|--------|------|-------|-------|------|------|-------|
| Onsite                    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —     |
| Daily,<br>Summer<br>(Max) | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —     |
| Off-Road<br>Equipment     | 0.62 | 18.9 | 14.3 | 0.02 | 0.69  | —     | 0.69  | 0.64   | —      | 0.64   | —    | 2,397 | 2,397 | 0.10 | 0.02 | 2,405 |
| Onsite<br>truck           | 0.00 | 0.00 | 0.00 | 0.00 | 0.00  | 0.00  | 0.00  | 0.00   | 0.00   | 0.00   | —    | 0.00  | 0.00  | 0.00 | 0.00 | 0.00  |
| Daily,<br>Winter<br>(Max) | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —     |
| Off-Road<br>Equipment     | 0.62 | 18.9 | 14.3 | 0.02 | 0.69  | —     | 0.69  | 0.64   | —      | 0.64   | —    | 2,397 | 2,397 | 0.10 | 0.02 | 2,405 |
| Onsite<br>truck           | 0.00 | 0.00 | 0.00 | 0.00 | 0.00  | 0.00  | 0.00  | 0.00   | 0.00   | 0.00   | —    | 0.00  | 0.00  | 0.00 | 0.00 | 0.00  |
| Average<br>Daily          | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —     |
| Off-Road<br>Equipment     | 0.35 | 10.7 | 8.09 | 0.01 | 0.39  | —     | 0.39  | 0.36   | —      | 0.36   | —    | 1,356 | 1,356 | 0.05 | 0.01 | 1,360 |
| Onsite<br>truck           | 0.00 | 0.00 | 0.00 | 0.00 | 0.00  | 0.00  | 0.00  | 0.00   | 0.00   | 0.00   | —    | 0.00  | 0.00  | 0.00 | 0.00 | 0.00  |
| Annual                    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —     |

|                     |         |      |      |         |         |      |      |         |      |      |   |       |       |         |         |       |
|---------------------|---------|------|------|---------|---------|------|------|---------|------|------|---|-------|-------|---------|---------|-------|
| Off-Road Equipment  | 0.06    | 1.95 | 1.48 | < 0.005 | 0.07    | —    | 0.07 | 0.07    | —    | 0.07 | — | 224   | 224   | 0.01    | < 0.005 | 225   |
| Onsite truck        | 0.00    | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 | 0.00 | 0.00    | 0.00 | 0.00 | — | 0.00  | 0.00  | 0.00    | 0.00    | 0.00  |
| Offsite             | —       | —    | —    | —       | —       | —    | —    | —       | —    | —    | — | —     | —     | —       | —       | —     |
| Daily, Summer (Max) | —       | —    | —    | —       | —       | —    | —    | —       | —    | —    | — | —     | —     | —       | —       | —     |
| Worker              | 1.10    | 0.72 | 12.0 | 0.00    | 0.00    | 1.87 | 1.87 | 0.00    | 0.45 | 0.45 | — | 2,164 | 2,164 | 0.11    | 0.08    | 2,197 |
| Vendor              | 0.05    | 1.27 | 0.62 | 0.01    | 0.01    | 0.19 | 0.20 | 0.01    | 0.05 | 0.06 | — | 750   | 750   | 0.01    | 0.11    | 784   |
| Hauling             | 0.00    | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 | 0.00 | 0.00    | 0.00 | 0.00 | — | 0.00  | 0.00  | 0.00    | 0.00    | 0.00  |
| Daily, Winter (Max) | —       | —    | —    | —       | —       | —    | —    | —       | —    | —    | — | —     | —     | —       | —       | —     |
| Worker              | 0.97    | 0.94 | 9.17 | 0.00    | 0.00    | 1.87 | 1.87 | 0.00    | 0.45 | 0.45 | — | 1,917 | 1,917 | 0.06    | 0.08    | 1,943 |
| Vendor              | 0.04    | 1.36 | 0.65 | 0.01    | 0.01    | 0.19 | 0.20 | 0.01    | 0.05 | 0.06 | — | 752   | 752   | 0.01    | 0.11    | 784   |
| Hauling             | 0.00    | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 | 0.00 | 0.00    | 0.00 | 0.00 | — | 0.00  | 0.00  | 0.00    | 0.00    | 0.00  |
| Average Daily       | —       | —    | —    | —       | —       | —    | —    | —       | —    | —    | — | —     | —     | —       | —       | —     |
| Worker              | 0.56    | 0.48 | 5.41 | 0.00    | 0.00    | 1.04 | 1.04 | 0.00    | 0.25 | 0.25 | — | 1,124 | 1,124 | 0.03    | 0.05    | 1,141 |
| Vendor              | 0.03    | 0.74 | 0.36 | < 0.005 | 0.01    | 0.11 | 0.11 | 0.01    | 0.03 | 0.04 | — | 425   | 425   | 0.01    | 0.06    | 443   |
| Hauling             | 0.00    | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 | 0.00 | 0.00    | 0.00 | 0.00 | — | 0.00  | 0.00  | 0.00    | 0.00    | 0.00  |
| Annual              | —       | —    | —    | —       | —       | —    | —    | —       | —    | —    | — | —     | —     | —       | —       | —     |
| Worker              | 0.10    | 0.09 | 0.99 | 0.00    | 0.00    | 0.19 | 0.19 | 0.00    | 0.05 | 0.05 | — | 186   | 186   | < 0.005 | 0.01    | 189   |
| Vendor              | < 0.005 | 0.14 | 0.07 | < 0.005 | < 0.005 | 0.02 | 0.02 | < 0.005 | 0.01 | 0.01 | — | 70.3  | 70.3  | < 0.005 | 0.01    | 73.4  |
| Hauling             | 0.00    | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 | 0.00 | 0.00    | 0.00 | 0.00 | — | 0.00  | 0.00  | 0.00    | 0.00    | 0.00  |

### 3.11. Paving (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | CO2e |
|----------|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|------|
|----------|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|------|

|                           |      |      |      |         |      |      |      |      |      |      |   |       |       |         |         |       |
|---------------------------|------|------|------|---------|------|------|------|------|------|------|---|-------|-------|---------|---------|-------|
| Onsite                    | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —       | —       | —     |
| Daily,<br>Summer<br>(Max) | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —       | —       | —     |
| Daily,<br>Winter<br>(Max) | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —       | —       | —     |
| Off-Road<br>Equipment     | 0.50 | 13.3 | 10.6 | 0.01    | 0.58 | —    | 0.58 | 0.54 | —    | 0.54 | — | 1,511 | 1,511 | 0.06    | 0.01    | 1,516 |
| Paving                    | 0.82 | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —       | —       | —     |
| Onsite<br>truck           | 0.00 | 0.00 | 0.00 | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00  | 0.00  | 0.00    | 0.00    | 0.00  |
| Average<br>Daily          | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —       | —       | —     |
| Off-Road<br>Equipment     | 0.07 | 1.82 | 1.45 | < 0.005 | 0.08 | —    | 0.08 | 0.07 | —    | 0.07 | — | 207   | 207   | 0.01    | < 0.005 | 208   |
| Paving                    | 0.11 | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —       | —       | —     |
| Onsite<br>truck           | 0.00 | 0.00 | 0.00 | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00  | 0.00  | 0.00    | 0.00    | 0.00  |
| Annual                    | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —       | —       | —     |
| Off-Road<br>Equipment     | 0.01 | 0.33 | 0.27 | < 0.005 | 0.01 | —    | 0.01 | 0.01 | —    | 0.01 | — | 34.3  | 34.3  | < 0.005 | < 0.005 | 34.4  |
| Paving                    | 0.02 | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —       | —       | —     |
| Onsite<br>truck           | 0.00 | 0.00 | 0.00 | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00  | 0.00  | 0.00    | 0.00    | 0.00  |
| Offsite                   | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —       | —       | —     |
| Daily,<br>Summer<br>(Max) | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —       | —       | —     |
| Daily,<br>Winter<br>(Max) | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —       | —       | —     |
| Worker                    | 0.06 | 0.05 | 0.53 | 0.00    | 0.00 | 0.11 | 0.11 | 0.00 | 0.03 | 0.03 | — | 111   | 111   | < 0.005 | < 0.005 | 113   |

|               |         |         |      |      |      |         |         |      |         |         |   |      |      |         |         |      |
|---------------|---------|---------|------|------|------|---------|---------|------|---------|---------|---|------|------|---------|---------|------|
| Vendor        | 0.00    | 0.00    | 0.00 | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 | 0.00    | 0.00    | — | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 |
| Hauling       | 0.00    | 0.00    | 0.00 | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 | 0.00    | 0.00    | — | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 |
| Average Daily | —       | —       | —    | —    | —    | —       | —       | —    | —       | —       | — | —    | —    | —       | —       | —    |
| Worker        | 0.01    | 0.01    | 0.08 | 0.00 | 0.00 | 0.01    | 0.01    | 0.00 | < 0.005 | < 0.005 | — | 15.8 | 15.8 | < 0.005 | < 0.005 | 16.1 |
| Vendor        | 0.00    | 0.00    | 0.00 | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 | 0.00    | 0.00    | — | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 |
| Hauling       | 0.00    | 0.00    | 0.00 | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 | 0.00    | 0.00    | — | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 |
| Annual        | —       | —       | —    | —    | —    | —       | —       | —    | —       | —       | — | —    | —    | —       | —       | —    |
| Worker        | < 0.005 | < 0.005 | 0.01 | 0.00 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | — | 2.62 | 2.62 | < 0.005 | < 0.005 | 2.66 |
| Vendor        | 0.00    | 0.00    | 0.00 | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 | 0.00    | 0.00    | — | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 |
| Hauling       | 0.00    | 0.00    | 0.00 | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 | 0.00    | 0.00    | — | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 |

### 3.13. Architectural Coating (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location               | ROG  | NOx  | CO   | SO2     | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4  | N2O     | CO2e |
|------------------------|------|------|------|---------|-------|-------|-------|--------|--------|--------|------|-------|------|------|---------|------|
| Onsite                 | —    | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —    | —    | —       | —    |
| Daily, Summer (Max)    | —    | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —    | —    | —       | —    |
| Daily, Winter (Max)    | —    | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —    | —    | —       | —    |
| Off-Road Equipment     | 0.05 | 1.09 | 0.96 | < 0.005 | 0.07  | —     | 0.07  | 0.06   | —      | 0.06   | —    | 134   | 134  | 0.01 | < 0.005 | 134  |
| Architectural Coatings | 53.3 | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —    | —    | —       | —    |
| Onsite truck           | 0.00 | 0.00 | 0.00 | 0.00    | 0.00  | 0.00  | 0.00  | 0.00   | 0.00   | 0.00   | —    | 0.00  | 0.00 | 0.00 | 0.00    | 0.00 |
| Average Daily          | —    | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —    | —    | —       | —    |



|                        |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |      |
|------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|------|
| Off-Road Equipment     | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 1.05 | 1.05 | < 0.005 | < 0.005 | 1.05 |
| Architectural Coatings | 0.42    | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    |
| Onsite truck           | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | — | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 |
| Annual                 | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    |
| Off-Road Equipment     | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 0.17 | 0.17 | < 0.005 | < 0.005 | 0.17 |
| Architectural Coatings | 0.08    | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    |
| Onsite truck           | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | — | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 |
| Offsite                | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    |
| Daily, Summer (Max)    | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    |
| Daily, Winter (Max)    | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    |
| Worker                 | 0.19    | 0.19    | 1.83    | 0.00    | 0.00    | 0.37    | 0.37    | 0.00    | 0.09    | 0.09    | — | 383  | 383  | 0.01    | 0.02    | 389  |
| Vendor                 | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | — | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 |
| Hauling                | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | — | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 |
| Average Daily          | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    |
| Worker                 | < 0.005 | < 0.005 | 0.01    | 0.00    | 0.00    | < 0.005 | < 0.005 | 0.00    | < 0.005 | < 0.005 | — | 3.11 | 3.11 | < 0.005 | < 0.005 | 3.16 |
| Vendor                 | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | — | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 |
| Hauling                | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | — | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 |
| Annual                 | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    |
| Worker                 | < 0.005 | < 0.005 | < 0.005 | 0.00    | 0.00    | < 0.005 | < 0.005 | 0.00    | < 0.005 | < 0.005 | — | 0.52 | 0.52 | < 0.005 | < 0.005 | 0.52 |

|         |      |      |      |      |      |      |      |      |      |      |   |      |      |      |      |      |
|---------|------|------|------|------|------|------|------|------|------|------|---|------|------|------|------|------|
| Vendor  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

### 3.15. Architectural Coating (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                      | ROG     | NOx  | CO   | SO2     | PM10E   | PM10D | PM10T   | PM2.5E  | PM2.5D | PM2.5T  | BCO2 | NBCO2 | CO2T | CH4     | N2O     | CO2e |
|-------------------------------|---------|------|------|---------|---------|-------|---------|---------|--------|---------|------|-------|------|---------|---------|------|
| Onsite                        | —       | —    | —    | —       | —       | —     | —       | —       | —      | —       | —    | —     | —    | —       | —       | —    |
| Daily,<br>Summer<br>(Max)     | —       | —    | —    | —       | —       | —     | —       | —       | —      | —       | —    | —     | —    | —       | —       | —    |
| Daily,<br>Winter<br>(Max)     | —       | —    | —    | —       | —       | —     | —       | —       | —      | —       | —    | —     | —    | —       | —       | —    |
| Off-Road<br>Equipment         | 0.05    | 1.09 | 0.96 | < 0.005 | 0.07    | —     | 0.07    | 0.06    | —      | 0.06    | —    | 134   | 134  | 0.01    | < 0.005 | 134  |
| Architectu<br>ral<br>Coatings | 53.3    | —    | —    | —       | —       | —     | —       | —       | —      | —       | —    | —     | —    | —       | —       | —    |
| Onsite<br>truck               | 0.00    | 0.00 | 0.00 | 0.00    | 0.00    | 0.00  | 0.00    | 0.00    | 0.00   | 0.00    | —    | 0.00  | 0.00 | 0.00    | 0.00    | 0.00 |
| Average<br>Daily              | —       | —    | —    | —       | —       | —     | —       | —       | —      | —       | —    | —     | —    | —       | —       | —    |
| Off-Road<br>Equipment         | 0.01    | 0.14 | 0.12 | < 0.005 | 0.01    | —     | 0.01    | 0.01    | —      | 0.01    | —    | 16.7  | 16.7 | < 0.005 | < 0.005 | 16.8 |
| Architectu<br>ral<br>Coatings | 6.68    | —    | —    | —       | —       | —     | —       | —       | —      | —       | —    | —     | —    | —       | —       | —    |
| Onsite<br>truck               | 0.00    | 0.00 | 0.00 | 0.00    | 0.00    | 0.00  | 0.00    | 0.00    | 0.00   | 0.00    | —    | 0.00  | 0.00 | 0.00    | 0.00    | 0.00 |
| Annual                        | —       | —    | —    | —       | —       | —     | —       | —       | —      | —       | —    | —     | —    | —       | —       | —    |
| Off-Road<br>Equipment         | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | —     | < 0.005 | < 0.005 | —      | < 0.005 | —    | 2.77  | 2.77 | < 0.005 | < 0.005 | 2.78 |

|                           |         |         |      |      |      |      |      |      |         |         |   |      |      |         |         |      |
|---------------------------|---------|---------|------|------|------|------|------|------|---------|---------|---|------|------|---------|---------|------|
| Architectu<br>Coatings    | 1.22    | —       | —    | —    | —    | —    | —    | —    | —       | —       | — | —    | —    | —       | —       | —    |
| Onsite<br>truck           | 0.00    | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00    | 0.00    | — | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 |
| Offsite                   | —       | —       | —    | —    | —    | —    | —    | —    | —       | —       | — | —    | —    | —       | —       | —    |
| Daily,<br>Summer<br>(Max) | —       | —       | —    | —    | —    | —    | —    | —    | —       | —       | — | —    | —    | —       | —       | —    |
| Daily,<br>Winter<br>(Max) | —       | —       | —    | —    | —    | —    | —    | —    | —       | —       | — | —    | —    | —       | —       | —    |
| Worker                    | 0.18    | 0.17    | 1.69 | 0.00 | 0.00 | 0.37 | 0.37 | 0.00 | 0.09    | 0.09    | — | 376  | 376  | 0.01    | 0.02    | 381  |
| Vendor                    | 0.00    | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00    | 0.00    | — | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 |
| Hauling                   | 0.00    | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00    | 0.00    | — | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 |
| Average<br>Daily          | —       | —       | —    | —    | —    | —    | —    | —    | —       | —       | — | —    | —    | —       | —       | —    |
| Worker                    | 0.02    | 0.02    | 0.22 | 0.00 | 0.00 | 0.05 | 0.05 | 0.00 | 0.01    | 0.01    | — | 48.8 | 48.8 | < 0.005 | < 0.005 | 49.5 |
| Vendor                    | 0.00    | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00    | 0.00    | — | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 |
| Hauling                   | 0.00    | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00    | 0.00    | — | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 |
| Annual                    | —       | —       | —    | —    | —    | —    | —    | —    | —       | —       | — | —    | —    | —       | —       | —    |
| Worker                    | < 0.005 | < 0.005 | 0.04 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | < 0.005 | < 0.005 | — | 8.08 | 8.08 | < 0.005 | < 0.005 | 8.19 |
| Vendor                    | 0.00    | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00    | 0.00    | — | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 |
| Hauling                   | 0.00    | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00    | 0.00    | — | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 |

## 4. Operations Emissions Details

### 4.1. Mobile Emissions by Land Use

#### 4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use                          | ROG  | NOx  | CO   | SO2  | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2  | CO2T   | CH4  | N2O  | CO2e   |
|-----------------------------------|------|------|------|------|-------|-------|-------|--------|--------|--------|------|--------|--------|------|------|--------|
| Daily, Summer (Max)               | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —      | —      | —    | —    | —      |
| Medical Office Building           | 4.77 | 3.39 | 22.4 | 0.05 | 0.05  | 1.51  | 1.55  | 0.04   | 0.27   | 0.31   | —    | 5,169  | 5,169  | 0.27 | 0.31 | 5,283  |
| Hotel                             | 2.34 | 1.66 | 11.0 | 0.02 | 0.02  | 0.74  | 0.76  | 0.02   | 0.13   | 0.15   | —    | 2,532  | 2,532  | 0.13 | 0.15 | 2,588  |
| Junior College (2yr)              | 2.18 | 1.55 | 10.2 | 0.02 | 0.02  | 0.69  | 0.71  | 0.02   | 0.12   | 0.14   | —    | 2,367  | 2,367  | 0.12 | 0.14 | 2,419  |
| Congregate Care (Assisted Living) | 2.31 | 1.77 | 11.9 | 0.03 | 0.02  | 0.85  | 0.87  | 0.02   | 0.15   | 0.17   | —    | 2,886  | 2,886  | 0.13 | 0.17 | 2,947  |
| Apartment's Mid Rise              | 2.01 | 1.54 | 10.3 | 0.02 | 0.02  | 0.74  | 0.76  | 0.02   | 0.13   | 0.15   | —    | 2,507  | 2,507  | 0.12 | 0.14 | 2,560  |
| Other Non-Asphalt Surfaces        | 0.00 | 0.00 | 0.00 | 0.00 | 0.00  | 0.00  | 0.00  | 0.00   | 0.00   | 0.00   | —    | 0.00   | 0.00   | 0.00 | 0.00 | 0.00   |
| Parking Lot                       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00  | 0.00  | 0.00  | 0.00   | 0.00   | 0.00   | —    | 0.00   | 0.00   | 0.00 | 0.00 | 0.00   |
| Strip Mall                        | 4.40 | 3.13 | 20.6 | 0.05 | 0.04  | 1.39  | 1.43  | 0.04   | 0.24   | 0.28   | —    | 4,773  | 4,773  | 0.25 | 0.29 | 4,878  |
| Total                             | 18.0 | 13.0 | 86.4 | 0.20 | 0.18  | 5.91  | 6.08  | 0.17   | 1.04   | 1.21   | —    | 20,234 | 20,234 | 1.02 | 1.20 | 20,676 |
| Daily, Winter (Max)               | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —      | —      | —    | —    | —      |
| Medical Office Building           | 4.17 | 3.83 | 21.8 | 0.05 | 0.05  | 1.51  | 1.55  | 0.04   | 0.27   | 0.31   | —    | 4,775  | 4,775  | 0.33 | 0.33 | 4,883  |
| Hotel                             | 2.04 | 1.88 | 10.7 | 0.02 | 0.02  | 0.74  | 0.76  | 0.02   | 0.13   | 0.15   | —    | 2,339  | 2,339  | 0.16 | 0.16 | 2,392  |

|                                   |      |      |      |         |         |      |      |         |      |      |   |        |        |      |      |        |
|-----------------------------------|------|------|------|---------|---------|------|------|---------|------|------|---|--------|--------|------|------|--------|
| Junior College (2yr)              | 1.91 | 1.75 | 9.98 | 0.02    | 0.02    | 0.69 | 0.71 | 0.02    | 0.12 | 0.14 | — | 2,187  | 2,187  | 0.15 | 0.15 | 2,236  |
| Congregate Care (Assisted Living) | 2.03 | 2.01 | 11.3 | 0.03    | 0.02    | 0.85 | 0.87 | 0.02    | 0.15 | 0.17 | — | 2,663  | 2,663  | 0.16 | 0.18 | 2,720  |
| Apartment s Mid Rise              | 1.76 | 1.74 | 9.79 | 0.02    | 0.02    | 0.74 | 0.76 | 0.02    | 0.13 | 0.15 | — | 2,314  | 2,314  | 0.14 | 0.15 | 2,363  |
| Other Non-Asphalt Surfaces        | 0.00 | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 | 0.00 | 0.00    | 0.00 | 0.00 | — | 0.00   | 0.00   | 0.00 | 0.00 | 0.00   |
| Parking Lot                       | 0.00 | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 | 0.00 | 0.00    | 0.00 | 0.00 | — | 0.00   | 0.00   | 0.00 | 0.00 | 0.00   |
| Strip Mall                        | 3.85 | 3.54 | 20.1 | 0.04    | 0.04    | 1.39 | 1.43 | 0.04    | 0.24 | 0.28 | — | 4,409  | 4,409  | 0.30 | 0.31 | 4,508  |
| Total                             | 15.8 | 14.8 | 83.6 | 0.18    | 0.18    | 5.91 | 6.08 | 0.17    | 1.04 | 1.21 | — | 18,687 | 18,687 | 1.24 | 1.28 | 19,102 |
| Annual                            | —    | —    | —    | —       | —       | —    | —    | —       | —    | —    | — | —      | —      | —    | —    | —      |
| Medical Office Building           | 0.78 | 0.66 | 3.77 | 0.01    | 0.01    | 0.27 | 0.28 | 0.01    | 0.05 | 0.06 | — | 809    | 809    | 0.05 | 0.05 | 827    |
| Hotel                             | 0.38 | 0.32 | 1.85 | < 0.005 | < 0.005 | 0.13 | 0.14 | < 0.005 | 0.02 | 0.03 | — | 396    | 396    | 0.02 | 0.03 | 405    |
| Junior College (2yr)              | 0.36 | 0.30 | 1.73 | < 0.005 | < 0.005 | 0.13 | 0.13 | < 0.005 | 0.02 | 0.03 | — | 370    | 370    | 0.02 | 0.02 | 379    |
| Congregate Care (Assisted Living) | 0.38 | 0.34 | 1.97 | < 0.005 | < 0.005 | 0.15 | 0.16 | < 0.005 | 0.03 | 0.03 | — | 451    | 451    | 0.02 | 0.03 | 461    |
| Apartment s Mid Rise              | 0.33 | 0.30 | 1.71 | < 0.005 | < 0.005 | 0.13 | 0.14 | < 0.005 | 0.02 | 0.03 | — | 392    | 392    | 0.02 | 0.02 | 400    |

|                            |      |      |      |      |      |      |      |      |      |      |   |       |       |      |      |       |
|----------------------------|------|------|------|------|------|------|------|------|------|------|---|-------|-------|------|------|-------|
| Other Non-Asphalt Surfaces | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00  | 0.00  | 0.00 | 0.00 | 0.00  |
| Parking Lot                | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00  | 0.00  | 0.00 | 0.00 | 0.00  |
| Strip Mall                 | 0.72 | 0.61 | 3.48 | 0.01 | 0.01 | 0.25 | 0.26 | 0.01 | 0.04 | 0.05 | — | 747   | 747   | 0.05 | 0.05 | 764   |
| Total                      | 2.93 | 2.53 | 14.5 | 0.03 | 0.03 | 1.08 | 1.11 | 0.03 | 0.19 | 0.22 | — | 3,166 | 3,166 | 0.19 | 0.20 | 3,236 |

## 4.2. Energy

### 4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use                          | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T  | CH4  | N2O     | CO2e  |
|-----------------------------------|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|-------|------|---------|-------|
| Daily, Summer (Max)               | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —       | —     |
| Medical Office Building           | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | 2,034 | 2,034 | 0.13 | 0.02    | 2,042 |
| Hotel                             | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | 2,046 | 2,046 | 0.13 | 0.02    | 2,053 |
| Junior College (2yr)              | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | 533   | 533   | 0.03 | < 0.005 | 535   |
| Congregate Care (Assisted Living) | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | 1,023 | 1,023 | 0.06 | 0.01    | 1,027 |
| Apartment s Mid Rise              | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | 662   | 662   | 0.04 | < 0.005 | 665   |
| Other Non-Asphalt Surfaces        | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | 0.00  | 0.00  | 0.00 | 0.00    | 0.00  |

|                                   |   |   |   |   |   |   |   |   |   |   |   |       |       |      |         |       |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|-------|-------|------|---------|-------|
| Parking Lot                       | — | — | — | — | — | — | — | — | — | — | — | 870   | 870   | 0.05 | 0.01    | 873   |
| Strip Mall                        | — | — | — | — | — | — | — | — | — | — | — | 623   | 623   | 0.04 | < 0.005 | 625   |
| Total                             | — | — | — | — | — | — | — | — | — | — | — | 7,790 | 7,790 | 0.48 | 0.06    | 7,820 |
| Daily, Winter (Max)               | — | — | — | — | — | — | — | — | — | — | — | —     | —     | —    | —       | —     |
| Medical Office Building           | — | — | — | — | — | — | — | — | — | — | — | 2,034 | 2,034 | 0.13 | 0.02    | 2,042 |
| Hotel                             | — | — | — | — | — | — | — | — | — | — | — | 2,046 | 2,046 | 0.13 | 0.02    | 2,053 |
| Junior College (2yr)              | — | — | — | — | — | — | — | — | — | — | — | 533   | 533   | 0.03 | < 0.005 | 535   |
| Congregate Care (Assisted Living) | — | — | — | — | — | — | — | — | — | — | — | 1,023 | 1,023 | 0.06 | 0.01    | 1,027 |
| Apartment s Mid Rise              | — | — | — | — | — | — | — | — | — | — | — | 662   | 662   | 0.04 | < 0.005 | 665   |
| Other Non-Asphalt Surfaces        | — | — | — | — | — | — | — | — | — | — | — | 0.00  | 0.00  | 0.00 | 0.00    | 0.00  |
| Parking Lot                       | — | — | — | — | — | — | — | — | — | — | — | 870   | 870   | 0.05 | 0.01    | 873   |
| Strip Mall                        | — | — | — | — | — | — | — | — | — | — | — | 623   | 623   | 0.04 | < 0.005 | 625   |
| Total                             | — | — | — | — | — | — | — | — | — | — | — | 7,790 | 7,790 | 0.48 | 0.06    | 7,820 |
| Annual                            | — | — | — | — | — | — | — | — | — | — | — | —     | —     | —    | —       | —     |
| Medical Office Building           | — | — | — | — | — | — | — | — | — | — | — | 337   | 337   | 0.02 | < 0.005 | 338   |
| Hotel                             | — | — | — | — | — | — | — | — | — | — | — | 339   | 339   | 0.02 | < 0.005 | 340   |



|                                   |   |   |   |   |   |   |   |   |   |   |   |       |       |      |         |       |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|-------|-------|------|---------|-------|
| Junior College (2yr)              | — | — | — | — | — | — | — | — | — | — | — | 88.3  | 88.3  | 0.01 | < 0.005 | 88.6  |
| Congregate Care (Assisted Living) | — | — | — | — | — | — | — | — | — | — | — | 169   | 169   | 0.01 | < 0.005 | 170   |
| Apartment s Mid Rise              | — | — | — | — | — | — | — | — | — | — | — | 110   | 110   | 0.01 | < 0.005 | 110   |
| Other Non-Asphalt Surfaces        | — | — | — | — | — | — | — | — | — | — | — | 0.00  | 0.00  | 0.00 | 0.00    | 0.00  |
| Parking Lot                       | — | — | — | — | — | — | — | — | — | — | — | 144   | 144   | 0.01 | < 0.005 | 145   |
| Strip Mall                        | — | — | — | — | — | — | — | — | — | — | — | 103   | 103   | 0.01 | < 0.005 | 104   |
| Total                             | — | — | — | — | — | — | — | — | — | — | — | 1,290 | 1,290 | 0.08 | 0.01    | 1,295 |

#### 4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use                | ROG  | NOx  | CO   | SO2     | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4  | N2O     | CO2e |
|-------------------------|------|------|------|---------|-------|-------|-------|--------|--------|--------|------|-------|------|------|---------|------|
| Daily, Summer (Max)     | —    | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —    | —    | —       | —    |
| Medical Office Building | 0.04 | 0.71 | 0.60 | < 0.005 | 0.05  | —     | 0.05  | 0.05   | —      | 0.05   | —    | 852   | 852  | 0.08 | < 0.005 | 854  |
| Hotel                   | 0.04 | 0.81 | 0.68 | < 0.005 | 0.06  | —     | 0.06  | 0.06   | —      | 0.06   | —    | 967   | 967  | 0.09 | < 0.005 | 970  |
| Junior College (2yr)    | 0.02 | 0.42 | 0.35 | < 0.005 | 0.03  | —     | 0.03  | 0.03   | —      | 0.03   | —    | 502   | 502  | 0.04 | < 0.005 | 503  |

|                                   |         |      |      |         |      |   |      |      |   |      |   |       |       |      |         |       |
|-----------------------------------|---------|------|------|---------|------|---|------|------|---|------|---|-------|-------|------|---------|-------|
| Congregate Care (Assisted Living) | 0.04    | 0.63 | 0.27 | < 0.005 | 0.05 | — | 0.05 | 0.05 | — | 0.05 | — | 801   | 801   | 0.07 | < 0.005 | 803   |
| Apartment s Mid Rise              | 0.02    | 0.41 | 0.17 | < 0.005 | 0.03 | — | 0.03 | 0.03 | — | 0.03 | — | 519   | 519   | 0.05 | < 0.005 | 520   |
| Other Non-Asphalt Surfaces        | 0.00    | 0.00 | 0.00 | 0.00    | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00  | 0.00  | 0.00 | 0.00    | 0.00  |
| Parking Lot                       | 0.00    | 0.00 | 0.00 | 0.00    | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00  | 0.00  | 0.00 | 0.00    | 0.00  |
| Strip Mall                        | < 0.005 | 0.07 | 0.06 | < 0.005 | 0.01 | — | 0.01 | 0.01 | — | 0.01 | — | 80.4  | 80.4  | 0.01 | < 0.005 | 80.6  |
| Total                             | 0.17    | 3.05 | 2.13 | 0.02    | 0.24 | — | 0.24 | 0.24 | — | 0.24 | — | 3,720 | 3,720 | 0.33 | 0.01    | 3,730 |
| Daily, Winter (Max)               | —       | —    | —    | —       | —    | — | —    | —    | — | —    | — | —     | —     | —    | —       | —     |
| Medical Office Building           | 0.04    | 0.71 | 0.60 | < 0.005 | 0.05 | — | 0.05 | 0.05 | — | 0.05 | — | 852   | 852   | 0.08 | < 0.005 | 854   |
| Hotel                             | 0.04    | 0.81 | 0.68 | < 0.005 | 0.06 | — | 0.06 | 0.06 | — | 0.06 | — | 967   | 967   | 0.09 | < 0.005 | 970   |
| Junior College (2yr)              | 0.02    | 0.42 | 0.35 | < 0.005 | 0.03 | — | 0.03 | 0.03 | — | 0.03 | — | 502   | 502   | 0.04 | < 0.005 | 503   |
| Congregate Care (Assisted Living) | 0.04    | 0.63 | 0.27 | < 0.005 | 0.05 | — | 0.05 | 0.05 | — | 0.05 | — | 801   | 801   | 0.07 | < 0.005 | 803   |
| Apartment s Mid Rise              | 0.02    | 0.41 | 0.17 | < 0.005 | 0.03 | — | 0.03 | 0.03 | — | 0.03 | — | 519   | 519   | 0.05 | < 0.005 | 520   |
| Other Non-Asphalt Surfaces        | 0.00    | 0.00 | 0.00 | 0.00    | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00  | 0.00  | 0.00 | 0.00    | 0.00  |

|                                   |         |      |      |         |         |   |         |         |   |         |   |       |       |         |         |       |
|-----------------------------------|---------|------|------|---------|---------|---|---------|---------|---|---------|---|-------|-------|---------|---------|-------|
| Parking Lot                       | 0.00    | 0.00 | 0.00 | 0.00    | 0.00    | — | 0.00    | 0.00    | — | 0.00    | — | 0.00  | 0.00  | 0.00    | 0.00    | 0.00  |
| Strip Mall                        | < 0.005 | 0.07 | 0.06 | < 0.005 | 0.01    | — | 0.01    | 0.01    | — | 0.01    | — | 80.4  | 80.4  | 0.01    | < 0.005 | 80.6  |
| Total                             | 0.17    | 3.05 | 2.13 | 0.02    | 0.24    | — | 0.24    | 0.24    | — | 0.24    | — | 3,720 | 3,720 | 0.33    | 0.01    | 3,730 |
| Annual                            | —       | —    | —    | —       | —       | — | —       | —       | — | —       | — | —     | —     | —       | —       | —     |
| Medical Office Building           | 0.01    | 0.13 | 0.11 | < 0.005 | 0.01    | — | 0.01    | 0.01    | — | 0.01    | — | 141   | 141   | 0.01    | < 0.005 | 141   |
| Hotel                             | 0.01    | 0.15 | 0.12 | < 0.005 | 0.01    | — | 0.01    | 0.01    | — | 0.01    | — | 160   | 160   | 0.01    | < 0.005 | 161   |
| Junior College (2yr)              | < 0.005 | 0.08 | 0.06 | < 0.005 | 0.01    | — | 0.01    | 0.01    | — | 0.01    | — | 83.0  | 83.0  | 0.01    | < 0.005 | 83.3  |
| Congregate Care (Assisted Living) | 0.01    | 0.12 | 0.05 | < 0.005 | 0.01    | — | 0.01    | 0.01    | — | 0.01    | — | 133   | 133   | 0.01    | < 0.005 | 133   |
| Apartment s Mid Rise              | < 0.005 | 0.07 | 0.03 | < 0.005 | 0.01    | — | 0.01    | 0.01    | — | 0.01    | — | 85.9  | 85.9  | 0.01    | < 0.005 | 86.1  |
| Other Non-Asphalt Surfaces        | 0.00    | 0.00 | 0.00 | 0.00    | 0.00    | — | 0.00    | 0.00    | — | 0.00    | — | 0.00  | 0.00  | 0.00    | 0.00    | 0.00  |
| Parking Lot                       | 0.00    | 0.00 | 0.00 | 0.00    | 0.00    | — | 0.00    | 0.00    | — | 0.00    | — | 0.00  | 0.00  | 0.00    | 0.00    | 0.00  |
| Strip Mall                        | < 0.005 | 0.01 | 0.01 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 13.3  | 13.3  | < 0.005 | < 0.005 | 13.3  |
| Total                             | 0.03    | 0.56 | 0.39 | < 0.005 | 0.04    | — | 0.04    | 0.04    | — | 0.04    | — | 616   | 616   | 0.05    | < 0.005 | 618   |

### 4.3. Area Emissions by Source

#### 4.3.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Source | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | CO2e |
|--------|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|------|
|--------|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|------|

|                        |      |      |      |         |         |   |         |         |   |         |       |       |       |         |         |       |
|------------------------|------|------|------|---------|---------|---|---------|---------|---|---------|-------|-------|-------|---------|---------|-------|
| Daily, Summer (Max)    | —    | —    | —    | —       | —       | — | —       | —       | — | —       | —     | —     | —     | —       | —       | —     |
| Hearths                | 5.80 | 2.74 | 52.5 | 0.18    | 7.53    | — | 7.53    | 7.26    | — | 7.26    | 1,245 | 2,411 | 3,655 | 5.86    | < 0.005 | 3,803 |
| Consumer Products      | 9.68 | —    | —    | —       | —       | — | —       | —       | — | —       | —     | —     | —     | —       | —       | —     |
| Architectural Coatings | 0.73 | —    | —    | —       | —       | — | —       | —       | — | —       | —     | —     | —     | —       | —       | —     |
| Landscap e Equipmen t  | 2.92 | 0.22 | 23.8 | < 0.005 | 0.02    | — | 0.02    | 0.03    | — | 0.03    | —     | 79.2  | 79.2  | < 0.005 | < 0.005 | 79.5  |
| Total                  | 19.1 | 2.96 | 76.3 | 0.18    | 7.55    | — | 7.55    | 7.28    | — | 7.28    | 1,245 | 2,490 | 3,735 | 5.87    | 0.01    | 3,883 |
| Daily, Winter (Max)    | —    | —    | —    | —       | —       | — | —       | —       | — | —       | —     | —     | —     | —       | —       | —     |
| Hearths                | 5.80 | 2.74 | 52.5 | 0.18    | 7.53    | — | 7.53    | 7.26    | — | 7.26    | 1,245 | 2,411 | 3,655 | 5.86    | < 0.005 | 3,803 |
| Consumer Products      | 9.68 | —    | —    | —       | —       | — | —       | —       | — | —       | —     | —     | —     | —       | —       | —     |
| Architectural Coatings | 0.73 | —    | —    | —       | —       | — | —       | —       | — | —       | —     | —     | —     | —       | —       | —     |
| Total                  | 16.2 | 2.74 | 52.5 | 0.18    | 7.53    | — | 7.53    | 7.26    | — | 7.26    | 1,245 | 2,411 | 3,655 | 5.86    | < 0.005 | 3,803 |
| Annual                 | —    | —    | —    | —       | —       | — | —       | —       | — | —       | —     | —     | —     | —       | —       | —     |
| Hearths                | 0.24 | 0.11 | 2.15 | 0.01    | 0.31    | — | 0.31    | 0.30    | — | 0.30    | 46.3  | 89.7  | 136   | 0.22    | < 0.005 | 141   |
| Consumer Products      | 1.77 | —    | —    | —       | —       | — | —       | —       | — | —       | —     | —     | —     | —       | —       | —     |
| Architectural Coatings | 0.13 | —    | —    | —       | —       | — | —       | —       | — | —       | —     | —     | —     | —       | —       | —     |
| Landscap e Equipmen t  | 0.26 | 0.02 | 2.14 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | —     | 6.47  | 6.47  | < 0.005 | < 0.005 | 6.49  |

|       |      |      |      |      |      |   |      |      |   |      |      |      |     |      |         |     |
|-------|------|------|------|------|------|---|------|------|---|------|------|------|-----|------|---------|-----|
| Total | 2.40 | 0.13 | 4.30 | 0.01 | 0.31 | — | 0.31 | 0.30 | — | 0.30 | 46.3 | 96.1 | 142 | 0.22 | < 0.005 | 148 |
|-------|------|------|------|------|------|---|------|------|---|------|------|------|-----|------|---------|-----|

#### 4.4. Water Emissions by Land Use

##### 4.4.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use                          | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4     | N2O     | CO2e |
|-----------------------------------|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|---------|---------|------|
| Daily, Summer (Max)               | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —       | —       | —    |
| Medical Office Building           | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | 17.4 | 52.1  | 69.5 | 1.79    | 0.04    | 127  |
| Hotel                             | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | 5.10 | 15.3  | 20.4 | 0.52    | 0.01    | 37.2 |
| Junior College (2yr)              | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | 3.29 | 9.86  | 13.1 | 0.34    | 0.01    | 24.0 |
| Congregate Care (Assisted Living) | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | 10.4 | 31.2  | 41.5 | 1.07    | 0.03    | 75.9 |
| Apartment s Mid Rise              | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | 6.73 | 20.2  | 26.9 | 0.69    | 0.02    | 49.1 |
| Other Non-Asphalt Surfaces        | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | 0.00 | 0.00  | 0.00 | 0.00    | 0.00    | 0.00 |
| Parking Lot                       | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | 0.00 | 9.65  | 9.65 | < 0.005 | < 0.005 | 9.69 |
| Strip Mall                        | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | 5.89 | 17.6  | 23.5 | 0.61    | 0.01    | 43.0 |
| Total                             | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | 48.8 | 156   | 205  | 5.01    | 0.12    | 366  |

|                                   |   |   |   |   |   |   |   |   |   |   |      |      |      |         |         |      |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|------|------|------|---------|---------|------|
| Daily, Winter (Max)               | — | — | — | — | — | — | — | — | — | — | —    | —    | —    | —       | —       | —    |
| Medical Office Building           | — | — | — | — | — | — | — | — | — | — | 17.4 | 52.1 | 69.5 | 1.79    | 0.04    | 127  |
| Hotel                             | — | — | — | — | — | — | — | — | — | — | 5.10 | 15.3 | 20.4 | 0.52    | 0.01    | 37.2 |
| Junior College (2yr)              | — | — | — | — | — | — | — | — | — | — | 3.29 | 9.86 | 13.1 | 0.34    | 0.01    | 24.0 |
| Congregate Care (Assisted Living) | — | — | — | — | — | — | — | — | — | — | 10.4 | 31.2 | 41.5 | 1.07    | 0.03    | 75.9 |
| Apartment S Mid Rise              | — | — | — | — | — | — | — | — | — | — | 6.73 | 20.2 | 26.9 | 0.69    | 0.02    | 49.1 |
| Other Non-Asphalt Surfaces        | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 |
| Parking Lot                       | — | — | — | — | — | — | — | — | — | — | 0.00 | 9.65 | 9.65 | < 0.005 | < 0.005 | 9.69 |
| Strip Mall                        | — | — | — | — | — | — | — | — | — | — | 5.89 | 17.6 | 23.5 | 0.61    | 0.01    | 43.0 |
| Total                             | — | — | — | — | — | — | — | — | — | — | 48.8 | 156  | 205  | 5.01    | 0.12    | 366  |
| Annual                            | — | — | — | — | — | — | — | — | — | — | —    | —    | —    | —       | —       | —    |
| Medical Office Building           | — | — | — | — | — | — | — | — | — | — | 2.88 | 8.62 | 11.5 | 0.30    | 0.01    | 21.0 |
| Hotel                             | — | — | — | — | — | — | — | — | — | — | 0.85 | 2.53 | 3.38 | 0.09    | < 0.005 | 6.17 |
| Junior College (2yr)              | — | — | — | — | — | — | — | — | — | — | 0.54 | 1.63 | 2.18 | 0.06    | < 0.005 | 3.97 |

|                                   |   |   |   |   |   |   |   |   |   |   |      |      |      |         |         |      |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|------|------|------|---------|---------|------|
| Congregate Care (Assisted Living) | — | — | — | — | — | — | — | — | — | — | 1.72 | 5.16 | 6.88 | 0.18    | < 0.005 | 12.6 |
| Apartment s Mid Rise              | — | — | — | — | — | — | — | — | — | — | 1.11 | 3.34 | 4.45 | 0.11    | < 0.005 | 8.13 |
| Other Non-Asphalt Surfaces        | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00    | 0.00    | 0.00 |
| Parking Lot                       | — | — | — | — | — | — | — | — | — | — | 0.00 | 1.60 | 1.60 | < 0.005 | < 0.005 | 1.60 |
| Strip Mall                        | — | — | — | — | — | — | — | — | — | — | 0.98 | 2.92 | 3.90 | 0.10    | < 0.005 | 7.12 |
| Total                             | — | — | — | — | — | — | — | — | — | — | 8.08 | 25.8 | 33.9 | 0.83    | 0.02    | 60.6 |

## 4.5. Waste Emissions by Land Use

### 4.5.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use                | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4  | N2O  | CO2e  |
|-------------------------|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|------|------|-------|
| Daily, Summer (Max)     | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —    | —    | —     |
| Medical Office Building | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | 421  | 0.00  | 421  | 42.1 | 0.00 | 1,472 |
| Hotel                   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | 31.0 | 0.00  | 31.0 | 3.10 | 0.00 | 108   |
| Junior College (2yr)    | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | 24.5 | 0.00  | 24.5 | 2.45 | 0.00 | 85.8  |



|                                   |   |   |   |   |   |   |   |   |   |   |      |      |      |      |      |       |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|------|------|------|------|------|-------|
| Congregate Care (Assisted Living) | — | — | — | — | — | — | — | — | — | — | 212  | 0.00 | 212  | 21.2 | 0.00 | 742   |
| Apartment<br>s<br>Mid Rise        | — | — | — | — | — | — | — | — | — | — | 35.9 | 0.00 | 35.9 | 3.59 | 0.00 | 126   |
| Other<br>Non-Asphalt<br>Surfaces  | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00  |
| Parking<br>Lot                    | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00  |
| Strip Mall                        | — | — | — | — | — | — | — | — | — | — | 23.5 | 0.00 | 23.5 | 2.35 | 0.00 | 82.2  |
| Total                             | — | — | — | — | — | — | — | — | — | — | 748  | 0.00 | 748  | 74.7 | 0.00 | 2,616 |
| Daily,<br>Winter<br>(Max)         | — | — | — | — | — | — | — | — | — | — | —    | —    | —    | —    | —    | —     |
| Medical<br>Office<br>Building     | — | — | — | — | — | — | — | — | — | — | 421  | 0.00 | 421  | 42.1 | 0.00 | 1,472 |
| Hotel                             | — | — | — | — | — | — | — | — | — | — | 31.0 | 0.00 | 31.0 | 3.10 | 0.00 | 108   |
| Junior<br>College<br>(2yr)        | — | — | — | — | — | — | — | — | — | — | 24.5 | 0.00 | 24.5 | 2.45 | 0.00 | 85.8  |
| Congregate Care (Assisted Living) | — | — | — | — | — | — | — | — | — | — | 212  | 0.00 | 212  | 21.2 | 0.00 | 742   |
| Apartment<br>s<br>Mid Rise        | — | — | — | — | — | — | — | — | — | — | 35.9 | 0.00 | 35.9 | 3.59 | 0.00 | 126   |
| Other<br>Non-Asphalt<br>Surfaces  | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00  |

|                                   |   |   |   |   |   |   |   |   |   |   |      |      |      |      |      |       |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|------|------|------|------|------|-------|
| Parking Lot                       | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00  |
| Strip Mall                        | — | — | — | — | — | — | — | — | — | — | 23.5 | 0.00 | 23.5 | 2.35 | 0.00 | 82.2  |
| Total                             | — | — | — | — | — | — | — | — | — | — | 748  | 0.00 | 748  | 74.7 | 0.00 | 2,616 |
| Annual                            | — | — | — | — | — | — | — | — | — | — | —    | —    | —    | —    | —    | —     |
| Medical Office Building           | — | — | — | — | — | — | — | — | — | — | 69.7 | 0.00 | 69.7 | 6.96 | 0.00 | 244   |
| Hotel                             | — | — | — | — | — | — | — | — | — | — | 5.13 | 0.00 | 5.13 | 0.51 | 0.00 | 17.9  |
| Junior College (2yr)              | — | — | — | — | — | — | — | — | — | — | 4.06 | 0.00 | 4.06 | 0.41 | 0.00 | 14.2  |
| Congregate Care (Assisted Living) | — | — | — | — | — | — | — | — | — | — | 35.1 | 0.00 | 35.1 | 3.51 | 0.00 | 123   |
| Apartments Mid Rise               | — | — | — | — | — | — | — | — | — | — | 5.94 | 0.00 | 5.94 | 0.59 | 0.00 | 20.8  |
| Other Non-Asphalt Surfaces        | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00  |
| Parking Lot                       | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00  |
| Strip Mall                        | — | — | — | — | — | — | — | — | — | — | 3.89 | 0.00 | 3.89 | 0.39 | 0.00 | 13.6  |
| Total                             | — | — | — | — | — | — | — | — | — | — | 124  | 0.00 | 124  | 12.4 | 0.00 | 433   |

## 4.6. Refrigerant Emissions by Land Use

### 4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | CO2e |
|----------|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|------|
|----------|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|------|

|                                   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |      |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|------|
| Daily, Summer (Max)               | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | —    |
| Medical Office Building           | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 1.85 |
| Hotel                             | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 156  |
| Junior College (2yr)              | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 0.14 |
| Congregate Care (Assisted Living) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 1.57 |
| Apartment s Mid Rise              | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 0.55 |
| Strip Mall                        | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 0.26 |
| Total                             | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 161  |
| Daily, Winter (Max)               | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | —    |
| Medical Office Building           | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 1.85 |
| Hotel                             | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 156  |
| Junior College (2yr)              | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 0.14 |
| Congregate Care (Assisted Living) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 1.57 |

|                                                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |      |
|------------------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|------|
| Apartment<br>s                                 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 0.55 |
| Strip Mall                                     | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 0.26 |
| Total                                          | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 161  |
| Annual                                         | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | —    |
| Medical<br>Office<br>Building                  | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 0.31 |
| Hotel                                          | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 25.9 |
| Junior<br>College<br>(2yr)                     | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 0.02 |
| Congregat<br>e<br>Care<br>(Assisted<br>Living) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 0.26 |
| Apartment<br>s<br>Mid Rise                     | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 0.09 |
| Strip Mall                                     | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 0.04 |
| Total                                          | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 26.6 |

## 4.7. Offroad Emissions By Equipment Type

### 4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Equipmen<br>t<br>Type     | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | CO2e |
|---------------------------|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|------|
| Daily,<br>Summer<br>(Max) | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |

|                           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total                     | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily,<br>Winter<br>(Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total                     | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Annual                    | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total                     | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

## 4.8. Stationary Emissions By Equipment Type

### 4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Equipment Type            | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | CO2e |
|---------------------------|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|------|
| Daily,<br>Summer<br>(Max) | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |
| Total                     | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |
| Daily,<br>Winter<br>(Max) | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |
| Total                     | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |
| Annual                    | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |
| Total                     | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |

## 4.9. User Defined Emissions By Equipment Type

### 4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Equipment Type      | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | CO2e |
|---------------------|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|------|
| Daily, Summer (Max) | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |
| Total               | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |
| Daily, Winter (Max) | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |
| Total               | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |
| Annual              | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |
| Total               | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |

#### 4.10. Soil Carbon Accumulation By Vegetation Type

##### 4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Vegetation          | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | CO2e |
|---------------------|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|------|
| Daily, Summer (Max) | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |
| Total               | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |
| Daily, Winter (Max) | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |
| Total               | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |
| Annual              | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |
| Total               | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |

##### 4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use            | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | CO2e |
|---------------------|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|------|
| Daily, Summer (Max) | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |
| Total               | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |
| Daily, Winter (Max) | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |
| Total               | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |
| Annual              | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |
| Total               | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |

#### 4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Species             | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | CO2e |
|---------------------|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|------|
| Daily, Summer (Max) | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |
| Avoided             | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |
| Subtotal            | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |
| Sequestered         | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |
| Subtotal            | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |
| Removed             | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |
| Subtotal            | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |
| —                   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |
| Daily, Winter (Max) | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |
| Avoided             | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |
| Subtotal            | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | —    |



|              |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sequester    | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal     | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Removed      | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal     | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| —            | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Annual       | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Avoided      | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal     | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Sequester ed | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal     | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Removed      | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal     | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| —            | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

5. Activity Data

5.1. Construction Schedule

| Phase Name            | Phase Type            | Start Date | End Date   | Days Per Week | Work Days per Phase | Phase Description |
|-----------------------|-----------------------|------------|------------|---------------|---------------------|-------------------|
| Site Preparation      | Site Preparation      | 3/4/2024   | 4/5/2024   | 5.00          | 25.0                | —                 |
| Grading               | Grading               | 4/8/2024   | 6/28/2024  | 5.00          | 60.0                | —                 |
| Building Construction | Building Construction | 7/1/2024   | 10/16/2026 | 5.00          | 600                 | —                 |
| Paving                | Paving                | 10/19/2026 | 12/25/2026 | 5.00          | 50.0                | —                 |
| Architectural Coating | Architectural Coating | 12/28/2026 | 3/5/2027   | 5.00          | 50.0                | —                 |

5.2. Off-Road Equipment

## 5.2.1. Unmitigated

| Phase Name            | Equipment Type            | Fuel Type | Engine Tier | Number per Day | Hours Per Day | Horsepower | Load Factor |
|-----------------------|---------------------------|-----------|-------------|----------------|---------------|------------|-------------|
| Site Preparation      | Rubber Tired Dozers       | Diesel    | Tier 2      | 3.00           | 8.00          | 367        | 0.40        |
| Site Preparation      | Tractors/Loaders/Backhoes | Diesel    | Tier 2      | 4.00           | 8.00          | 84.0       | 0.37        |
| Grading               | Excavators                | Diesel    | Tier 2      | 2.00           | 8.00          | 36.0       | 0.38        |
| Grading               | Graders                   | Diesel    | Tier 2      | 1.00           | 8.00          | 148        | 0.41        |
| Grading               | Rubber Tired Dozers       | Diesel    | Tier 2      | 1.00           | 8.00          | 367        | 0.40        |
| Grading               | Scrapers                  | Diesel    | Tier 2      | 2.00           | 8.00          | 423        | 0.48        |
| Grading               | Tractors/Loaders/Backhoes | Diesel    | Tier 2      | 2.00           | 8.00          | 84.0       | 0.37        |
| Building Construction | Cranes                    | Diesel    | Tier 2      | 1.00           | 7.00          | 367        | 0.29        |
| Building Construction | Forklifts                 | Diesel    | Tier 2      | 3.00           | 8.00          | 82.0       | 0.20        |
| Building Construction | Generator Sets            | Diesel    | Tier 2      | 1.00           | 8.00          | 14.0       | 0.74        |
| Building Construction | Tractors/Loaders/Backhoes | Diesel    | Tier 2      | 3.00           | 7.00          | 84.0       | 0.37        |
| Building Construction | Welders                   | Diesel    | Tier 2      | 1.00           | 8.00          | 46.0       | 0.45        |
| Paving                | Pavers                    | Diesel    | Tier 2      | 2.00           | 8.00          | 81.0       | 0.42        |
| Paving                | Paving Equipment          | Diesel    | Tier 2      | 2.00           | 8.00          | 89.0       | 0.36        |
| Paving                | Rollers                   | Diesel    | Tier 2      | 2.00           | 8.00          | 36.0       | 0.38        |
| Architectural Coating | Air Compressors           | Diesel    | Tier 2      | 1.00           | 6.00          | 37.0       | 0.48        |

## 5.3. Construction Vehicles

## 5.3.1. Unmitigated

| Phase Name       | Trip Type | One-Way Trips per Day | Miles per Trip | Vehicle Mix   |
|------------------|-----------|-----------------------|----------------|---------------|
| Site Preparation | —         | —                     | —              | —             |
| Site Preparation | Worker    | 17.5                  | 10.6           | LDA,LDT1,LDT2 |

|                       |              |      |      |               |
|-----------------------|--------------|------|------|---------------|
| Site Preparation      | Vendor       | —    | 3.50 | HHDT,MHDT     |
| Site Preparation      | Hauling      | 0.00 | 20.0 | HHDT          |
| Site Preparation      | Onsite truck | —    | —    | HHDT          |
| Grading               | —            | —    | —    | —             |
| Grading               | Worker       | 20.0 | 10.6 | LDA,LDT1,LDT2 |
| Grading               | Vendor       | —    | 3.50 | HHDT,MHDT     |
| Grading               | Hauling      | 125  | 20.0 | HHDT          |
| Grading               | Onsite truck | —    | —    | HHDT          |
| Building Construction | —            | —    | —    | —             |
| Building Construction | Worker       | 258  | 10.6 | LDA,LDT1,LDT2 |
| Building Construction | Vendor       | 65.3 | 3.50 | HHDT,MHDT     |
| Building Construction | Hauling      | 0.00 | 20.0 | HHDT          |
| Building Construction | Onsite truck | —    | —    | HHDT          |
| Paving                | —            | —    | —    | —             |
| Paving                | Worker       | 15.0 | 10.6 | LDA,LDT1,LDT2 |
| Paving                | Vendor       | —    | 3.50 | HHDT,MHDT     |
| Paving                | Hauling      | 0.00 | 20.0 | HHDT          |
| Paving                | Onsite truck | —    | —    | HHDT          |
| Architectural Coating | —            | —    | —    | —             |
| Architectural Coating | Worker       | 51.6 | 10.6 | LDA,LDT1,LDT2 |
| Architectural Coating | Vendor       | —    | 3.50 | HHDT,MHDT     |
| Architectural Coating | Hauling      | 0.00 | 20.0 | HHDT          |
| Architectural Coating | Onsite truck | —    | —    | HHDT          |

## 5.4. Vehicles

### 5.4.1. Construction Vehicle Control Strategies

| Control Strategies Applied                      | PM10 Reduction | PM2.5 Reduction |
|-------------------------------------------------|----------------|-----------------|
| Water unpaved roads twice daily                 | 55%            | 55%             |
| Limit vehicle speeds on unpaved roads to 25 mph | 44%            | 44%             |
| Sweep paved roads once per month                | 9%             | 9%              |

## 5.5. Architectural Coatings

| Phase Name            | Residential Interior Area Coated (sq ft) | Residential Exterior Area Coated (sq ft) | Non-Residential Interior Area Coated (sq ft) | Non-Residential Exterior Area Coated (sq ft) | Parking Area Coated (sq ft) |
|-----------------------|------------------------------------------|------------------------------------------|----------------------------------------------|----------------------------------------------|-----------------------------|
| Architectural Coating | 404,941                                  | 134,980                                  | 373,208                                      | 124,403                                      | 56,558                      |

## 5.6. Dust Mitigation

### 5.6.1. Construction Earthmoving Activities

| Phase Name       | Material Imported (cy) | Material Exported (cy) | Acres Graded (acres) | Material Demolished (sq. ft.) | Acres Paved (acres) |
|------------------|------------------------|------------------------|----------------------|-------------------------------|---------------------|
| Site Preparation | —                      | —                      | 37.5                 | 0.00                          | —                   |
| Grading          | —                      | 60,000                 | 180                  | 0.00                          | —                   |
| Paving           | 0.00                   | 0.00                   | 0.00                 | 0.00                          | 21.6                |

### 5.6.2. Construction Earthmoving Control Strategies

| Control Strategies Applied | Frequency (per day) | PM10 Reduction | PM2.5 Reduction |
|----------------------------|---------------------|----------------|-----------------|
| Water Exposed Area         | 2                   | 61%            | 61%             |

## 5.7. Construction Paving

| Land Use                | Area Paved (acres) | % Asphalt |
|-------------------------|--------------------|-----------|
| Medical Office Building | 0.00               | 0%        |
| Hotel                   | 0.00               | 0%        |

|                                   |      |      |
|-----------------------------------|------|------|
| Junior College (2yr)              | 0.00 | 0%   |
| Congregate Care (Assisted Living) | —    | 0%   |
| Apartments Mid Rise               | —    | 0%   |
| Other Non-Asphalt Surfaces        | 6.00 | 0%   |
| Parking Lot                       | 15.6 | 100% |
| Strip Mall                        | 0.00 | 0%   |

## 5.8. Construction Electricity Consumption and Emissions Factors

### kWh per Year and Emission Factor (lb/MWh)

| Year | kWh per Year | CO2 | CH4  | N2O     |
|------|--------------|-----|------|---------|
| 2024 | 0.00         | 532 | 0.03 | < 0.005 |
| 2025 | 0.00         | 532 | 0.03 | < 0.005 |
| 2026 | 0.00         | 532 | 0.03 | < 0.005 |
| 2027 | 0.00         | 532 | 0.03 | < 0.005 |

## 5.9. Operational Mobile Sources

### 5.9.1. Unmitigated

| Land Use Type                     | Trips/Weekday | Trips/Saturday | Trips/Sunday | Trips/Year | VMT/Weekday | VMT/Saturday | VMT/Sunday | VMT/Year  |
|-----------------------------------|---------------|----------------|--------------|------------|-------------|--------------|------------|-----------|
| Medical Office Building           | 1,393         | 1,393          | 1,393        | 508,561    | 5,447       | 5,447        | 5,447      | 1,988,040 |
| Hotel                             | 683           | 683            | 683          | 249,113    | 2,668       | 2,668        | 2,668      | 973,818   |
| Junior College (2yr)              | 638           | 638            | 638          | 232,888    | 2,494       | 2,494        | 2,494      | 910,395   |
| Congregate Care (Assisted Living) | 663           | 663            | 663          | 242,006    | 3,069       | 3,069        | 3,069      | 1,120,102 |
| Apartments Mid Rise               | 576           | 576            | 576          | 210,240    | 2,666       | 2,666        | 2,666      | 973,076   |
| Other Non-Asphalt Surfaces        | 0.00          | 0.00           | 0.00         | 0.00       | 0.00        | 0.00         | 0.00       | 0.00      |

|             |       |       |       |         |       |       |       |           |
|-------------|-------|-------|-------|---------|-------|-------|-------|-----------|
| Parking Lot | 0.00  | 0.00  | 0.00  | 0.00    | 0.00  | 0.00  | 0.00  | 0.00      |
| Strip Mall  | 1,287 | 1,287 | 1,287 | 469,573 | 5,029 | 5,029 | 5,029 | 1,835,629 |

## 5.10. Operational Area Sources

### 5.10.1. Hearths

#### 5.10.1.1. Unmitigated

| Hearth Type                       | Unmitigated (number) |
|-----------------------------------|----------------------|
| Congregate Care (Assisted Living) | —                    |
| Wood Fireplaces                   | 0                    |
| Gas Fireplaces                    | 70                   |
| Propane Fireplaces                | 0                    |
| Electric Fireplaces               | 0                    |
| No Fireplaces                     | 70                   |
| Conventional Wood Stoves          | 0                    |
| Catalytic Wood Stoves             | 7                    |
| Non-Catalytic Wood Stoves         | 7                    |
| Pellet Wood Stoves                | 0                    |
| Apartments Mid Rise               | —                    |
| Wood Fireplaces                   | 0                    |
| Gas Fireplaces                    | 45                   |
| Propane Fireplaces                | 0                    |
| Electric Fireplaces               | 0                    |
| No Fireplaces                     | 45                   |
| Conventional Wood Stoves          | 0                    |
| Catalytic Wood Stoves             | 5                    |
| Non-Catalytic Wood Stoves         | 5                    |

|                    |   |
|--------------------|---|
| Pellet Wood Stoves | 0 |
|--------------------|---|

### 5.10.2. Architectural Coatings

| Residential Interior Area Coated (sq ft) | Residential Exterior Area Coated (sq ft) | Non-Residential Interior Area Coated (sq ft) | Non-Residential Exterior Area Coated (sq ft) | Parking Area Coated (sq ft) |
|------------------------------------------|------------------------------------------|----------------------------------------------|----------------------------------------------|-----------------------------|
| 404941.27499999997                       | 134,980                                  | 373,208                                      | 124,403                                      | 56,558                      |

### 5.10.3. Landscape Equipment

| Season      | Unit   | Value |
|-------------|--------|-------|
| Snow Days   | day/yr | 0.00  |
| Summer Days | day/yr | 180   |

## 5.11. Operational Energy Consumption

### 5.11.1. Unmitigated

#### Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

| Land Use                          | Electricity (kWh/yr) | CO2 | CH4    | N2O    | Natural Gas (kBTU/yr) |
|-----------------------------------|----------------------|-----|--------|--------|-----------------------|
| Medical Office Building           | 1,395,423            | 532 | 0.0330 | 0.0040 | 2,657,190             |
| Hotel                             | 1,403,506            | 532 | 0.0330 | 0.0040 | 3,016,789             |
| Junior College (2yr)              | 365,853              | 532 | 0.0330 | 0.0040 | 1,564,872             |
| Congregate Care (Assisted Living) | 701,757              | 532 | 0.0330 | 0.0040 | 2,499,095             |
| Apartments Mid Rise               | 454,375              | 532 | 0.0330 | 0.0040 | 1,618,119             |
| Other Non-Asphalt Surfaces        | 0.00                 | 532 | 0.0330 | 0.0040 | 0.00                  |
| Parking Lot                       | 596,800              | 532 | 0.0330 | 0.0040 | 0.00                  |
| Strip Mall                        | 427,442              | 532 | 0.0330 | 0.0040 | 250,756               |



## 5.12. Operational Water and Wastewater Consumption

### 5.12.1. Unmitigated

| Land Use                          | Indoor Water (gal/year) | Outdoor Water (gal/year) |
|-----------------------------------|-------------------------|--------------------------|
| Medical Office Building           | 9,072,870               | 0.00                     |
| Hotel                             | 2,663,511               | 0.00                     |
| Junior College (2yr)              | 1,716,716               | 0.00                     |
| Congregate Care (Assisted Living) | 5,426,108               | 0.00                     |
| Apartments Mid Rise               | 3,513,308               | 0.00                     |
| Other Non-Asphalt Surfaces        | 0.00                    | 0.00                     |
| Parking Lot                       | 0.00                    | 2,737,629                |
| Strip Mall                        | 3,074,010               | 0.00                     |

## 5.13. Operational Waste Generation

### 5.13.1. Unmitigated

| Land Use                          | Waste (ton/year) | Cogeneration (kWh/year) |
|-----------------------------------|------------------|-------------------------|
| Medical Office Building           | 781              | 0.00                    |
| Hotel                             | 57.5             | 0.00                    |
| Junior College (2yr)              | 45.5             | 0.00                    |
| Congregate Care (Assisted Living) | 127              | 0.00                    |
| Apartments Mid Rise               | 21.5             | 0.00                    |
| Other Non-Asphalt Surfaces        | 0.00             | 0.00                    |
| Parking Lot                       | 0.00             | 0.00                    |
| Strip Mall                        | 43.6             | 0.00                    |

## 5.14. Operational Refrigeration and Air Conditioning Equipment

### 5.14.1. Unmitigated

| Land Use Type                     | Equipment Type                                          | Refrigerant | GWP   | Quantity (kg) | Operations Leak Rate | Service Leak Rate | Times Serviced |
|-----------------------------------|---------------------------------------------------------|-------------|-------|---------------|----------------------|-------------------|----------------|
| Medical Office Building           | Household refrigerators and/or freezers                 | R-134a      | 1,430 | 0.45          | 0.60                 | 0.00              | 1.00           |
| Medical Office Building           | Other commercial A/C and heat pumps                     | R-410A      | 2,088 | < 0.005       | 4.00                 | 4.00              | 18.0           |
| Hotel                             | Household refrigerators and/or freezers                 | R-134a      | 1,430 | 0.00          | 0.60                 | 0.00              | 1.00           |
| Hotel                             | Other commercial A/C and heat pumps                     | R-410A      | 2,088 | 1.80          | 4.00                 | 4.00              | 18.0           |
| Hotel                             | Walk-in refrigerators and freezers                      | R-404A      | 3,922 | < 0.005       | 7.50                 | 7.50              | 20.0           |
| Junior College (2yr)              | Household refrigerators and/or freezers                 | R-134a      | 1,430 | 0.02          | 0.60                 | 0.00              | 1.00           |
| Junior College (2yr)              | Other commercial A/C and heat pumps                     | R-410A      | 2,088 | < 0.005       | 4.00                 | 4.00              | 18.0           |
| Junior College (2yr)              | Stand-alone retail refrigerators and freezers           | R-134a      | 1,430 | < 0.005       | 1.00                 | 0.00              | 1.00           |
| Junior College (2yr)              | Walk-in refrigerators and freezers                      | R-404A      | 3,922 | < 0.005       | 7.50                 | 7.50              | 20.0           |
| Congregate Care (Assisted Living) | Average room A/C & Other residential A/C and heat pumps | R-410A      | 2,088 | < 0.005       | 2.50                 | 2.50              | 10.0           |
| Congregate Care (Assisted Living) | Household refrigerators and/or freezers                 | R-134a      | 1,430 | 0.22          | 0.60                 | 0.00              | 1.00           |
| Apartments Mid Rise               | Average room A/C & Other residential A/C and heat pumps | R-410A      | 2,088 | < 0.005       | 2.50                 | 2.50              | 10.0           |
| Apartments Mid Rise               | Household refrigerators and/or freezers                 | R-134a      | 1,430 | 0.12          | 0.60                 | 0.00              | 1.00           |

|            |                                               |        |       |         |      |      |      |
|------------|-----------------------------------------------|--------|-------|---------|------|------|------|
| Strip Mall | Other commercial A/C and heat pumps           | R-410A | 2,088 | < 0.005 | 4.00 | 4.00 | 18.0 |
| Strip Mall | Stand-alone retail refrigerators and freezers | R-134a | 1,430 | 0.04    | 1.00 | 0.00 | 1.00 |
| Strip Mall | Walk-in refrigerators and freezers            | R-404A | 3,922 | < 0.005 | 7.50 | 7.50 | 20.0 |

## 5.15. Operational Off-Road Equipment

### 5.15.1. Unmitigated

| Equipment Type | Fuel Type | Engine Tier | Number per Day | Hours Per Day | Horsepower | Load Factor |
|----------------|-----------|-------------|----------------|---------------|------------|-------------|
|----------------|-----------|-------------|----------------|---------------|------------|-------------|

## 5.16. Stationary Sources

### 5.16.1. Emergency Generators and Fire Pumps

| Equipment Type | Fuel Type | Number per Day | Hours per Day | Hours per Year | Horsepower | Load Factor |
|----------------|-----------|----------------|---------------|----------------|------------|-------------|
|----------------|-----------|----------------|---------------|----------------|------------|-------------|

### 5.16.2. Process Boilers

| Equipment Type | Fuel Type | Number | Boiler Rating (MMBtu/hr) | Daily Heat Input (MMBtu/day) | Annual Heat Input (MMBtu/yr) |
|----------------|-----------|--------|--------------------------|------------------------------|------------------------------|
|----------------|-----------|--------|--------------------------|------------------------------|------------------------------|

## 5.17. User Defined

| Equipment Type | Fuel Type |
|----------------|-----------|
| —              | —         |

## 5.18. Vegetation

### 5.18.1. Land Use Change

5.18.1.1. Unmitigated

| Vegetation Land Use Type | Vegetation Soil Type | Initial Acres | Final Acres |
|--------------------------|----------------------|---------------|-------------|
|--------------------------|----------------------|---------------|-------------|

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

| Biomass Cover Type | Initial Acres | Final Acres |
|--------------------|---------------|-------------|
|--------------------|---------------|-------------|

5.18.2. Sequestration

5.18.2.1. Unmitigated

| Tree Type | Number | Electricity Saved (kWh/year) | Natural Gas Saved (btu/year) |
|-----------|--------|------------------------------|------------------------------|
|-----------|--------|------------------------------|------------------------------|

8. User Changes to Default Data

| Screen                                    | Justification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Land Use                                  | Medical Office Building includes: a 22,525-square-foot ambulatory surgery center; a 12,445-square-foot specialty clinic; two 12,445-square-foot medical office buildings; and a 12,445-square-foot psychiatric health facility. Strip Mall includes 41,500 square feet of medical/commercial uses. Hotel includes a 100,000-square-foot, a four-story 105-room hotel with a conference center. Junior College includes a 35,000-square-foot nursing college. Congregate Care (Assisted Living) includes; a 54,611-square-foot skilled nursing facility; a 34,480-square-foot memory care facility; and a 34,380-square-foot assisted living facility. Mid-rise Apartment includes a three-story 90-unit multi-family apartment. Total project acreage is 39.23 acres. Assuming 10% of the project site would be landscaped. |
| Construction: Construction Phases         | Construction is anticipated to begin March 2024 and last approximately 3 years.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Construction: Off-Road Equipment          | Assuming the use of Tier 2 construction equipment.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Construction: Dust From Material Movement | Over excavation would be between 30,000 and 60,000 cubic yards of soil; therefore, this analysis assumes up to 60,000 cubic yards of export.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

|                          |                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operations: Vehicle Data | Assuming approximately 1,393 average daily trips (ADT) for the Medical Office Building land uses, 682 ADT for the hotel use, 638 ADT for the nursing college, 662 ADT for the assisted living uses, 576 ADT for the apartments, and 1,287 ADT for the Strip Mapp land uses based on the project's trip generation and taking into account 10% internal trips. |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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## APPENDIX B

# BIOLOGICAL RESOURCES ASSESSMENT

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# BIOLOGICAL RESOURCES ASSESSMENT

## HANFORD PLACE PROJECT CITY OF HANFORD, CALIFORNIA



LSA

June 2021

# **BIOLOGICAL RESOURCES ASSESSMENT**

## **HANFORD PLACE PROJECT CITY OF HANFORD, CALIFORNIA**

Submitted to:

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Prepared for:

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LSA Project No. EPI2001



June 2021

## EXECUTIVE SUMMARY

LSA Associates, Inc. (LSA) prepared this biological resources assessment for the proposed Hanford Place Project (project) located between State Route 198 and the San Joaquin Valley Railroad in the City of Hanford, Kings County, California. The project consists of a medical and mixed-use development spanning approximately 40 acres. A total of 15 buildings are proposed, including medical outpatient clinic services, hotel and conference center, specialized education, retail, medical office, skilled nursing and assisted living, and multi-family residential uses, as well as an infiltration basin, associated open space, circulation and parking, and infrastructure improvements. The project site was historically used for agricultural but has remained fallow for many years. The site is located on the margin of urban portions of the City of Hanford with no connection to undisturbed or natural lands.

In March 2020, LSA biologists conducted a literature review and records search to identify the existence and potential for occurrence of sensitive or special-status plant and animal species in the vicinity of the project site. Federal and state lists of sensitive species were also examined. Current electronic database records reviewed included the California Natural Diversity Database, California Native Plant Society's Electronic Inventory of Rare and Endangered Vascular Plants, and United States Fish and Wildlife Service's National Wetlands Inventory. Historic and current aerial imagery, existing environmental reports for developments in the project vicinity, regional habitat conservation plans, and local land use policies related to biological resources were also reviewed. A field survey covering the project site was conducted on April 27, 2020.

With the exception of the Peoples Ditch, the project site is strictly upland in nature with well-drained soils and vegetation consisting of nonnative grassland with patches of mixed herbaceous ruderal/invasive species and bare ground in several areas. Ongoing soil disturbance and the resulting competitive exclusion by invasive nonnative plants limit the potential for native flora to occur in the project site. No native or special-status vegetation communities exist on the project site. No special-status plant species were observed during the field survey and none are expected to occur due to historical and ongoing anthropogenic disturbances.

Habitat in the project site is considered low quality with respect to most of the regionally-occurring special-status animal species, and no special-status species were observed during the field survey. However, two special-status animal species—San Joaquin kit fox (*Vulpes macrotis mutica*) and burrowing owl (*Athene cunicularia*)—have at least a low potential to occur in the project site due to the presence of suitable habitat and known occurrence records in the project vicinity. The project site also contains foraging habitat for certain raptors such as Swainson's hawk (*Buteo swainsoni*) but suitable tree-nesting habitat is generally absent from the project site. Suitable avian nesting habitat on the project site is limited to that which supports ground-nesting species such as Savannah sparrow (*Passerculus sandwichensis*) and other birds that may nest in the annual herbaceous cover.

With the implementation of recommended impact avoidance, minimization, and mitigation measures—including pre-construction surveys and compliance with applicable regulatory requirements—there would be no significant impacts to special-status biological resources resulting from the project.

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## ATTACHMENTS

Appendix A (Figures), Appendix B (Plant Species Observed), Appendix C (Representative Site Photos), Appendix D (Regional Special-Status Species)

## INTRODUCTION

LSA has prepared this Biological Resources Assessment for the proposed Hanford Place Project (project) located between State Route 198 and the San Joaquin Valley Railroad in the City of Hanford (City), Kings County, California (refer to Figure 1, Project Location; all figures are provided in Appendix A). The purpose of this report is to describe and document biological resources—including sensitive and special-status species—known to occur or with the potential to occur on the proposed project site. This technical information is provided for project planning purposes and review under the California Environmental Quality Act (CEQA), California Endangered Species Act (CESA), the Federal Endangered Species Act (FESA), and other pertinent regulations.

The Biological Resources Assessment conducted for the project involved the following components:

- Reviewing existing relevant scientific literature and other pertinent information related to the survey area;
- Creating a list of regionally occurring special-status species determined to have the potential to occur on or in the vicinity of the project site;
- Characterizing the vegetation communities present within the survey area;
- Evaluating the potential for the occurrence of special-status plant and wildlife species within the survey area;
- Assessing the potential for the project to adversely impact existing biological resources; and
- Recommending avoidance, minimization, and mitigation measures to avoid or minimize any potentially significant project-related impacts to biological resources.

## PROJECT DESCRIPTION

The project involves a medical and mixed use development consisting of medical facility, skilled nursing, assisted living, retail and multi-family units on approximately 40 acres of vacant land located between State Route 198 and the San Joaquin Valley Railroad in the City of Hanford (Figure 2). Once constructed, and extension of 5th Street would run through the project site in an east/west direction and Campus Drive would be extended south into the site, with a roundabout constructed near the center portion of the site. Proposed road extensions and improvements would be dedicated as public right of way. As part of the project, Glendale Avenue would also be realigned and any portion of existing right of way not used would be abandoned. In addition, an open segment of Peoples Ditch (a constructed irrigation canal) that currently runs through the project site would be converted to an underground culvert.

The General Plan and zoning designation for the project site is currently Highway Commercial (C-H). The project would amend the General Plan and require a rezone to a combination of Office, Medium- or High-Density Residential and Regional or Highway Commercial.

The project would include the following: a 22,525-square-foot ambulatory surgery center; a 12,445-square-foot specialty clinic; two 12,445-square-foot medical office buildings; a 12,445-square-foot psychiatric health facility; a 10,000-square-foot, a four-story 105-room hotel with a conference

center and pool; a 35,000-square-foot nursing college; four 15,55-square-foot strip retail buildings; two 15,000-square-foot retail/drive-through/medical commercial buildings; a 54,611-square-foot skilled nursing facility; a 34,480-square-foot memory care facility; a three-story 90-unit multi-family apartment; two 11,000 medical/commercial buildings; and a 5-acre bio infiltration basin. In addition, the project would provide 1,466 parking spaces throughout the project site. Figure 3 shows the project site plan.

Regional access to the site is provided by State Route 198, which borders the southern portion of the project site and is located approximately 0.5 miles from the project site entrance. Site access would be provided by one main driveway along Campus Drive, as well as Fifth Street on the east side of the project site that would extend on the existing street alignment. The project would not require any work within undeveloped lands outside of the approximately 40-acre project site.

## PROJECT SETTING

The project site is located along the south central portion of the San Joaquin Valley floor in the Kings County. Specifically, the project site is located on four legal parcels (Assessor's Parcel Numbers 012-290-042, 012-290-054, 011-060-007, and 011-060-080) in the northeastern quarter of the United States Geological Survey (USGS) *Hanford, California*, 7.5-minute topographic quadrangle map (refer to Figure 1). The "project site" discussed in this report refers to all areas within the four legal parcels described above (totaling approximately 40 acres) and includes all areas where temporary and permanent ground disturbance would occur.

The project site is currently fallow and disturbed with no existing structures (Figure 2). The site was previously used for agriculture, consistent with many of the surrounding lands in the region. According to historic aerial imagery, the project site has remained in its current condition for more than 20 years. Adjacent parcels consist mostly of low-density residential and commercial developments, with several undeveloped lots located to the north of the project site. Recent developments along the margins of the City of Hanford and expansion into ranch land settlements have brought increased urban development throughout lands previously used for agriculture. Some lands in the vicinity of the project site are fallow or active agricultural lands; however, most of the lands are developed and are a mixture of school, residential, commercial, retail, and industrial uses. There are no undisturbed open spaces in the vicinity of the project site.

The project site is located within the San Joaquin Valley Sub-region of the California Floristic Province (Baldwin, et al. 2012) and within the Sand Slough watershed (Hydrologic Unit Code #180300122002). The project site is flat with almost no topographic variation and is at approximately 228 feet (69 meters) above mean sea level in elevation. An open segment of Peoples Ditch (a constructed irrigation canal) is located within the project site, but there are no natural drainage features or riparian areas present in the project site. Extensive soil disturbance from foot traffic and vehicles is evident throughout the site, and the site appears to be regularly disked for vegetation control. Several homeless encampments were present in multiple portions of the project site during the April 2020 site survey.

## METHODS

### LITERATURE REVIEW AND RECORDS SEARCH

LSA Biologist Kelly McDonald conducted a literature review and records search on March 31, 2020, to identify the existence and potential for occurrence of sensitive or special-status<sup>1</sup> plant and animal species in the vicinity of the project site. Federal and State lists of sensitive species were also examined. Current electronic database records reviewed included the following:

- **California Natural Diversity Data Base information (CNDDB – RareFind 5)**, which is administered by the California Department of Fish and Wildlife (CDFW), formerly known as the California Department of Fish and Game (CDFG). This database covers sensitive plant and animal species as well as sensitive natural communities that occur in California. Records from nine USGS quadrangles surrounding the project site (*Riverdale, Laton, Burris Park, Lemoore, Hanford, Remnoy, Stratford, Guernsey, and Waukena*) were obtained from this database to inform the field survey.
- **California Native Plant Society’s (CNPS) Electronic Inventory of Rare and Endangered Vascular Plants**, which utilizes four specific categories or “lists” of sensitive plant species to assist with the conservation of rare or endangered botanical resources. All of the plants constituting California Rare Plant Ranks 1A, 1B, 2A, and 2B are intended to meet the status definitions of “threatened” or “endangered” in CESA and the California Department of Fish and Game Code, and are considered by CNPS to be eligible for State listing. At the discretion of the CEQA Lead Agency, impacts to these species may be analyzed as such, pursuant to the CEQA Guidelines Sections 15125(c) and 15380. Plants in Rank 3 (limited information; review list), Rank 4 (limited distribution; watch list), or that are considered Locally Unusual and Significant may be analyzed under CEQA if there is sufficient information to assess potential significant impacts. Records from the nine USGS quadrangles surrounding the project site were obtained from this database to inform the field survey.
- **United States Fish and Wildlife Service’s (USFWS) Information for Planning and Conservation (IPaC) Online System**, which lists all proposed, candidate, threatened, and endangered species managed by the Endangered Species Program of the USFWS that have the potential to occur on or near a particular site. This database also lists all known critical habitats, national wildlife refuges, and migratory birds that could potentially be impacted by activities from a proposed project. An IPaC Trust Resource Report (USFWS 2020a) was generated for the project area.

---

<sup>1</sup> For the purposed of this report, the term “special-status species” refers to those species that are listed or proposed for listing under the CESA and/or FESA, California Fully Protected Species, California Species of Special Concern, and California Special Animals. It should be noted that “Species of Special Concern” and “California Special Animal” are administrative designations made by the CDFW and carry no formal legal protection status. However, Section 15380 of the CEQA Guidelines indicates that these species should be included in an analysis of project impacts if they can be shown to meet the criteria of sensitivity outlined therein.



- **Designated and Proposed USFWS Critical Habitat Polygons** were reviewed to determine whether critical habitat has been designated or proposed within or in the vicinity of the project site (USFWS 2020b).
- **The USFWS National Wetlands Inventory** was reviewed to determine whether any wetlands or surface waters of the United States have been previously-identified in the survey area (USFWS 2020c).
- **eBird:** eBird is a real-time, online checklist program launched in 2002 by the Cornell Lab of Ornithology and National Audubon Society. It provides rich data sources for basic information on bird abundance and distribution at a variety of spatial and temporal scales. eBird occurrence records for burrowing owl (*Athene cunicularia*) from a 5 mile radius around the project site were reviewed in May 2020 (eBird 2020).

In addition to the databases listed above, historic and current aerial imagery, existing environmental reports for developments in the project vicinity, and local land use policies related to biological resources were reviewed.

## FIELD SURVEY

A general biological survey of the project site was conducted by LSA Biologist Kelly McDonald on April 27, 2020. The project site was surveyed on foot, and all biological resources observed were noted and mapped. Suitable habitat for any species of interest or concern was duly noted, and general site conditions were photographed (Appendix C, Site Photos). The field survey took place on a clear sunny morning with weather conditions conducive to the detection of plant and animal species.

## RESULTS

This section summarizes the environmental setting and provides further analysis of the data collected in the field. Discussions regarding the existing project site conditions, soils, vegetation communities, potentially occurring special-status biological resources, and habitat connectivity are presented below.

The project site consists of flat, undeveloped parcels supporting nonnative grassland and other invasive plant species. Ruderal and nonnative grassland vegetation existing on the site appears to be regularly maintained. There is one tree, tree of heaven (*Ailanthus altissima*; a nonnative species), within the project site. Much of the soil and vegetation within the project site is disturbed from existing roadways in the immediate vicinity, off-highway vehicles, homeless encampment, and human foot traffic. Worn foot paths, litter, and trampling are evident throughout the project site.

Habitat within the project site is considered low quality with respect to most of the special-status animal species identified during the literature review and the project site is not expected to support any special-status plant species (refer to Appendix D). Wildlife species observed during the April 2020 field survey include: rock pigeon (*Columba livia*; nonnative species), Savannah sparrow (*Passerculus sandwichensis*), western kingbird (*Tyrannus verticalis*), northern mockingbird (*Mimus polyglottos*), mourning dove (*Zenaidura macroura*), double-crested cormorant (*Phalacrocorax auritus*), common raven (*Corvus corax*), red-tailed hawk (*Buteo jamaicensis*), European starling (*Sturnus vulgaris*; nonnative species), western fence lizard (*Sceloporus occidentalis*), Sierran tree frog (*Pseudacris sierra*), California toad (*Anaxyrus boreas halophilus*; tadpoles) and California ground squirrel (*Otospermophilus beecheyi*).

No riparian habitat exists in the project site or on adjacent parcels and there are no depressional wetlands (e.g., vernal pools) or natural drainage features within the project site. The project site does not serve as a wildlife nursery or as a wildlife migration corridor. Further details regarding specific biological resources are provided in the following subsections.

### VEGETATION COMMUNITIES AND LAND COVER TYPES

With the exception of an open portion of Peoples Ditch (an irrigation canal excavated in the late 1800's), the project site is strictly upland in nature with dominant vegetation consisting of nonnative grassland with patches of mixed herbaceous ruderal/invasive species. Ongoing soil disturbance and the resulting competitive exclusion by invasive nonnative plants limit the potential for native flora to occur in the project site. No native or special-status vegetation communities exist in the project site.

The identification and characterizations of vegetation communities generally follow the plant community descriptions in the Manual of California Vegetation (Sawyer et al. 2009). Anthropogenic areas are those areas that have been converted from their natural habitat to ones that are subject to ongoing human maintenance and disturbance; these areas include roads, road shoulders, and areas that are disturbed or maintained. The acreages of each vegetation community and land cover type occurring in the project site are shown in Table A, below. Representative photographs of the

project site are presented in Appendix C, and Figure 4 provides a map of these vegetation and land cover types within the project site.

**Table A: Vegetation and Land Cover Types Within the Project site**

| Vegetation / Land Cover Type          | Acreage <sup>1</sup> |
|---------------------------------------|----------------------|
| Wild oats and annual brome grasslands | 38.51                |
| Developed                             | 0.17                 |
| Disturbed / Barren                    | 1.10                 |
| Peoples Ditch – Irrigation Canal      | 0.51                 |
| <b>Total</b>                          | <b>40.29</b>         |

<sup>1</sup> All acreages were calculated using geographic information system (GIS) measurements and are considered approximate.

A total of 36 vascular plant species were identified within the project site during the April 2020 field survey (refer to Appendix B). A total of 27 of these plant species (75 percent) represent nonnative taxa, reflecting a high level of disturbance within the project site.

#### **Wild oats and annual brome grassland (*Avena spp.* - *Bromus spp.* Herbaceous Semi-Natural Alliance)**

Disturbed nonnative wild oats and annual brome grassland comprises the majority of the project site. Wild oats and annual brome grasslands are often found in foothills, waste places, rangelands, and opening in woodlands. This alliance is dominated by invasive/pioneering nonnative grasses including slender oats (*Avena barbata*), ripgut grass (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), barely grasses (*Hordeum spp.*), along with other nonnative/ruderal plant species such as Russian thistle (*Salsola tragus*). Less prevalent species at the time of survey included London rocket (*Sisymbrium irio*), cheeseweed mallow (*Malva parviflora*) and Mediterranean storks' bill (*Erodium malacoides*).

The dominance of these nonnative weedy species is indicative of historical and recent soil disturbance. Native perennial shrubs are entirely absent from the project site, and the site appears to be regularly maintained.

Large tracts of annual grassland habitat provide foraging and/or breeding habitat for many wildlife species. Vacant lots in the vicinity of the project site provide suitable habitat for numerous invertebrate species (such as insects), many of which provide a food source for animals such as lizards, birds, and small mammals, which in turn serve as a prey base for larger predator animals, including snakes, raptors, and coyotes. Due to the extensive weed coverage of the wild oats and annual brome grassland within the project site, it is not expected to provide high-quality foraging or nesting habitat for many special-status wildlife species known to occur in the region.

#### **Disturbed / Barren**

Based on an analysis of historical aerial imagery and observations during the April 2020 site survey, vehicles regularly park and drive across portions of the site, specifically along the project site perimeter. Portions of the central survey area also appeared to be disturbed by off-highway vehicles (as evinced by tire tracks, ruts, etc.). These disturbed areas lacked vegetation or supported a sparse

cover of ruderal vegetation, with annual nonnative grasses and Russian thistle being the most frequently encountered plant species. Several other invasive, pioneering plant species were also observed in these areas.

### Developed

Developed sites consist of paved areas, buildings, and other areas that are cleared or graded for anthropogenic purposes. A small portion (0.17 acre) of the project site contains an existing paved road which is mapped as developed.

### SOILS

According to the NRCS online soil survey of Kings County, the project site is primarily composed of Nord complex soils (99.3%) and the remaining are urban land (Figure 5). The Nord complex soil classification is discussed in greater detail below.

#### Nord complex, 0 to 2 Percent Slopes, MLRA 17

The parent material of this soil type is alluvium derived from igneous rock, occurring between 58 and 183 m in elevation. The drainage class of this soil type is well drained, and it is typically composed of fine sandy loam and stratified sandy loam to loam. Nord complex usually occurs on alluvial fans, and is used for growing irrigated field, forage, and row crops. When not irrigated, vegetation is typically annual grasses and forbs.

### SPECIAL-STATUS BIOLOGICAL RESOURCES

The Hanford region supports various special-status natural communities, plants, and animals. Appendix D provides tables that identify those special-status plant and animal species known to occur or that potentially occur in the vicinity of the project site (based on the literature review and experience in the region) and includes detailed information about each species' habitat and distribution, State and Federal status designations, and probability of occurrence within the project site. As stated in the methodology section above, the background research included occurrence records from nine USGS topographic quadrangles surrounding the survey area. A nine USGS quadrangle search covers a large, variable geographic and topographic area containing numerous habitat types not found within or around the project site.

The following subsections provide specific discussions for special-status natural communities, plant and animal species, and habitats of concern (including critical habitat, jurisdictional aquatic resources, wildlife movement corridors, and regional and local habitat conservation plans).

#### Special-Status Natural Communities

The CNDDDB search identified occurrences of two special-status natural (i.e., plant) communities within the nine-quad search area: Valley Sacaton Grassland and Valley Sink Scrub.

No special-status natural communities or conservation areas exist within the project site or in adjacent parcels. The project site is completely isolated and distant from all special-status natural communities that occur in the region.

## Special-Status Plants

The literature review identified eight special-status plant species that are known to occur within a nine-quad radius of the project site (refer to Appendix D). The majority of the rare plant species that were identified in the databases have specialized habitat requirements (i.e., they occur on predominantly alkaline soils, woodland, riparian, or wetland habitats, etc.) that do not occur within the project site.

Historic anthropogenic disturbances have greatly altered the natural hydrologic regimes and have either eliminated or greatly impacted the pre-settlement habitats needed to support the special-status plant species identified in the CNDDDB and CNPS queries. As such, the specific habitats, soil substrates or “micro-climates” necessary for special-status plant species to occur are absent within the boundaries of the project site. Based on site observations coupled with the habitat suitability analysis, no special-status plant species are expected to occur within the project site. It is also unlikely that any source populations exist in adjacent or nearby parcels.

## Special-Status Animals

The historic anthropogenic disturbances in the project site and adjacent parcels (i.e., farming, disking, off-highway vehicles, etc.) have greatly altered, eliminated, or impacted the pre-settlement habitats needed to support most of the special-status animal species identified in the CNDDDB and USFWS queries (refer to Appendix D). There are no known occurrences of any special-status animal species in the project site, and none were observed during the April 2020 field survey. Nonetheless, suitable habitat for several regionally-occurring special-status species is present in the project site and those species are discussed in further detail below.

Two special-status animal species, San Joaquin kit fox (*Vulpes macrotis mutica*), and burrowing owl (*Athene cunicularia*) have a moderate potential to occur in the project site due to the presence of suitable habitat and known records in the project vicinity. However, no sign which would indicate occupation or use by these species (e.g., scat, tracks, nesting materials, prey remains, or any other sign) was identified. Several small mammal burrows, including active California ground squirrel burrows and others (likely those of California vole [*Microtus californicus*], and/or Botta’s pocket gopher [*Thomomys bottae*]), were observed within the grassland habitats in the project site. None of the small mammal burrows observed in the project site exhibited features typical of occupied kit fox or burrowing owl burrows, although there is some potential for use by these species in the future. It should also be noted that the April 2020 survey took place at a time when regional documented burrowing owl habitat was occupied by the species (eBird 2020).

The project site contains foraging habitat for certain raptors such as the Swainson’s hawk (*Buteo swainsoni*) but potential tree-nesting habitat is extremely limited on the project site (only one nonnative tree was present during the April 2020 survey). Suitable avian nesting habitat in the project site is limited to that which supports ground-nesting species such as Savannah sparrow (*Passerculus sandwichensis*) and other birds that may nest in the annual herbaceous cover.

The evaluation of special-status animal species occurrence within the project site was based on a habitat suitability analysis. It did not include exhaustive surveys to determine their presence or absence, but did include direct observation of on-site and off-site conditions and a review of the available recorded occurrence data from the area to conclude whether or not a particular species could be expected to occur. Based on this analysis, it is unlikely that the remaining special-status wildlife species listed in Appendix D occur within the project site. Significant adverse impacts to special-status wildlife species are not anticipated with the implementation of the recommended impact avoidance, minimization, and mitigation measures described in further detail below.

### Critical Habitat

The project site is not located within or adjacent to designated or proposed critical habitat for any species.

### Jurisdictional Aquatic Resources

With the exception of an open segment of Peoples Ditch (an irrigation canal excavated in the late 1800's), the project site is strictly upland in nature with well-drained soils.

The Peoples Ditch is an artificially-constructed and maintained irrigation canal (owned and operated by the Peoples Ditch Company) that conveys diverted water to farmland south of the project site. Within the Hanford region, Peoples Ditch has open trapezoidal sections as well as portions that run underground through culverts of various sizes and lengths. At the project site, the Peoples Ditch is an open trapezoidal channel measuring approximately 32 feet in width from the top-of-bank to top-of-bank and approximately 10 feet deep. Most of the canal was dry during the April 2020 site survey, indicating an ephemeral flow regime at this location. The active channel width (e.g., area typically subject to seasonal flows) was measured in two locations (one near the culvert outfall at the southern terminus of Campus Drive/railroad alignment, and one near the southern culvert inlet that goes under State Route 198); the active channel width measures approximately 12 feet wide. The canal appears to be regularly maintained for vegetation control and irrigation water conveyance.

Three plants typically associated with wetlands were observed in the canal: seep monkeyflower (*Mimulus guttatus*), western marsh cudweed (*Gnaphalium palustre*), and common knotweed (*Persicaria lapathifolia*). Additionally, Sierran tree frog (*Pseudacris sierra*) were heard calling and California toad (*Anaxyrus boreas halophilus*) tadpoles were observed within the canal. Litter and signs of other human disturbance were also present within the canal.

Due to the presence of a bed and bank and presence of water-dependent plants and wildlife, the Peoples Ditch may fall within the jurisdiction of CDFW under Section 1602 of the California Fish and Game Code and the Regional Water Quality Control Board (RWQCB) under the California Water Code. However, the Peoples Ditch does not appear to have a downstream nexus with any jurisdictional water of the United States based on analysis of aerial imagery and topographic maps, and pursuant to the *Navigable Waters Protection Rule* (EPA and DOA 2020), effective June 22, 2020, the Peoples Ditch does not meet the definition of a jurisdictional water of the United States subject to regulation under Section 404 of the federal Clean Water Act. Furthermore, the Peoples Ditch does not meet the wetland criteria outlined in the *State Wetland Definition and Procedures for*

*Discharges of Dredged or Fill Material to Waters of the State* (SWRCB 2019), which excludes agricultural ditches with ephemeral flow that are not a relocated water of the state or excavated in a water of the state. Nevertheless, prior to any project project-related impacts to Peoples Ditch, it is recommended to consult with the United States Army Corps of Engineers (USACE), CDFW, and RWQCB to verify the feature's jurisdictional status, and obtain applicable permit(s) and/or authorization(s), if any.

### Wildlife Movement and Habitat Connectivity

The project site is isolated from natural areas and is surrounded by existing developments and highways. Therefore, it is unlikely that the site serves as an important corridor for animals moving locally, regionally, or in broader migrations. Migratory bird species may utilize the project site for foraging; however, the usage is likely transient and limited to species that forage over open grassland areas. The project site does not possess any characteristics that would indicate a locally significant stopover point for migratory species including raptors or waterfowl.

No known wildlife movement corridors occur within the project site or in the immediate vicinity.

### Regional Habitat Conservation Plans and Local Policies

The City of Hanford and Kings County currently do not have a regional Natural Community Conservation Plan or Habitat Conservation Plan. The 2035 General Plan for the City of Hanford outlines local relevant policies related to biological resources. Below is the list of applicable policies:

- 5.5.1 Natural Habitat: Goal 04: Protection of natural habitat and other biological resources.
  - *Policy 031 Provision of Open Space Areas*: Preserve and enhance open space area.
  - *Policy 032 Wetland and Riparian Corridor*: Where appropriate and feasible, establish permanent mechanisms to protect wetlands and riparian corridors.
  - *Policy 033 Vernal Pools*: Identify and protect vernal pools that be located in Planning Area.
  - *Policy 035 Impacts from Development*: Ensure that potential impacts to biological resources and sensitive habitat are carefully evaluated when considering development projects.
  - *Policy 037 Mature Trees*: Promote the preservation of existing mature trees and encourage the planting of appropriate shade trees in new developments.
  - *Policy 038 Native Tree Species and Drought Tolerant Vegetation*: Encourage the planting of native tree species and drought-tolerant vegetation.
- 5.5.2 Wildlife and Sensitive Species
  - *Policy 039 Endangered Wildlife and Habitat*: Establish programs in connection with environmental review processes to protect endangered wildlife and their habitats.
  - *Policy 040 Sensitive Wildlife*: Work with state, federal, and local agencies on the preservation of sensitive wildlife species in the City.



## IMPACT FINDINGS AND RECOMMENDED MITIGATION MEASURES

The following impact assessment and recommended mitigation measures are intended to support the CEQA review process. The project, as proposed by the applicant, coupled with LSA's survey results and review of biological literature, provided the basis for this analysis. The impact discussion below addresses the range of impacts that could result from the proposed project, as well as recommended mitigation measures that would avoid, reduce, or compensate for such impacts.

### SPECIAL-STATUS NATURAL COMMUNITIES

The project site does not contain any special-status natural communities and such habitats would not be impacted by the proposed project.

### SPECIAL-STATUS SPECIES

No special-status plant species are expected to occur within the project site or to be adversely affected by the proposed project.

While no special-status animal species (or signs of such species) were observed on site during the April 2020 survey, several small mammal burrows were observed within the project site that are considered suitable habitat for burrowing owl, a California Species of Special Concern, and/or San Joaquin kit fox, a federally listed as endangered and state-listed as threatened species. None of the small mammal burrows observed in the project site exhibited features typical of occupied kit fox or burrowing owl burrows at the time of the survey, although there is some potential for use by these species in the future. Potentially significant direct and indirect impacts, including mortality, harassment, or other forms of incidental take, could occur if construction-related ground disturbance occurs in or around an occupied den or burrow.

No other special-status species were determined to have a moderate or high probability of occurrence on the project site (refer to Appendix D). The removal of the disturbed annual grassland habitat documented on the project site is not anticipated to substantially impact the population sizes of any special-status animal species given the context and setting of the project site and additional habitats for such species in the project vicinity.

While suitable habitat for shrub and tree nesting birds is very limited on the project site (only one tree occurs within the site boundaries), the project site does contain suitable nesting habitat for a variety of ground-nesting birds and for other birds that could nest in the annual herbaceous vegetation. Nesting birds are protected under the California Fish and Game Code. Construction activities that occur during the nesting bird season (typically February 15 through September 15) have potential to result in the direct or indirect take of nesting birds.

If unmitigated or avoided, these potential direct and indirect impacts on special-status wildlife species and nesting birds could be considered potentially significant. However, implementation of Mitigation Measures BIO-1 through BIO-4, as summarized below, would effectively mitigate any impacts on special-status wildlife species to less-than-significant levels.

**Mitigation Measure BIO-1: Conduct Preconstruction Clearance Surveys for San Joaquin Kit Fox and Burrowing Owl.** A preconstruction clearance survey is required for San Joaquin kit fox and burrowing owl no more than 30 calendar days prior to initiation of project activities. All survey results must be delivered to the USFWS, the CDFW, and the City of Hanford. If the survey results find an active burrow of one or both of these species on the project site, the applicant must coordinate with the applicable resource agencies (CDFW for burrowing owl, CDFW and USFWS for kit fox) to obtain applicable agency approval(s)/permit(s) prior to any ground disturbance activities on the site.

Specific avoidance, den excavation, passive relocation, and compensatory mitigation activities shall be performed as required by the applicable agency. Appropriate provisions of the *CDFW Staff Report on Burrowing Owl Mitigation* (CDFG 2012) and *USFWS Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox* (USFWS 2011) shall be adhered to.

**Mitigation Measure BIO-2. Worker Environmental Awareness Training.** Prior to initial groundbreaking, Worker Environmental Awareness Training shall be conducted by a qualified biologist to educate all construction personnel on the relevant federal, state, and local laws related to potentially occurring special-status species at the site. The tailgate session shall include training on identification of species that may be found on the project site, the status of those species, and any legal protection afforded to those species. Personnel will be advised to report any special-status species encountered promptly. A fact sheet conveying this information will be prepared for display or for distribution to anyone who may enter the project site.

**Mitigation Measure BIO-3. Construction Site Housekeeping and Operational Requirements.** Habitat subject to permanent and temporary construction disturbances and other types of ongoing project-related disturbance activities shall be minimized by adhering to the following *USFWS Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox* (USFWS 2011):

- A. To minimize temporary disturbances, all project-related vehicle traffic shall be restricted to established roads, construction areas, and other designated areas. These areas shall also be included in preconstruction surveys and, to the extent possible, shall be established in locations disturbed by previous activities to prevent further impacts.
- B. Project-related vehicles shall observe a daytime speed limit of 20-mph throughout the site in all project sites, except on county roads

and state and federal highways; this is particularly important at night when kit foxes are most active. Night-time construction shall be minimized to the extent possible. However if it does occur, then the speed limit shall be reduced to 10-mph. Off-road traffic outside of designated project sites shall be prohibited.

- C. To prevent inadvertent entrapment of kit foxes or other animals during the construction phase of a project, all excavated, steep-walled holes or trenches more than 2-feet deep shall be covered at the close of each working day by plywood or similar materials. If the trenches cannot be closed, one or more escape ramps constructed of earthen-fill or wooden planks shall be installed. Before such holes or trenches are filled, they shall be thoroughly inspected for trapped animals. If at any time a trapped or injured kit fox is discovered, the USFWS and the CDFW shall be contacted.
- D. Kit foxes are attracted to den-like structures such as pipes and may enter stored pipes and become trapped or injured. All construction pipes, culverts, or similar structures with a diameter of 4-inches or greater that are stored at a construction site for one or more overnight periods shall be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a kit fox is discovered inside a pipe, that section of pipe shall not be moved until the USFWS and CDFW have been consulted. If necessary, and under the direct supervision of a qualified biologist, the pipe may be moved only once to remove it from the path of construction activity, until the fox has escaped. In the case of trapped animals, escape ramps or structures shall be installed immediately to allow the animal(s) to escape, or the USFWS and CDFW should be contacted for further guidance.
- E. All food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in securely closed containers and removed at least once a week from a construction or project site.
- F. Pets, such as dogs or cats, shall not be permitted on the project site to prevent harassment, mortality of kit foxes, or destruction of dens.
- G. Use of rodenticides and herbicides in project sites shall be restricted. This is necessary to prevent primary or secondary poisoning of kit foxes and the depletion of prey populations on which they depend. All uses of such compounds shall observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and other state and federal legislation. If rodent control must be

conducted, zinc phosphide should be used because of a proven lower risk to kit fox.

**Mitigation Measure BIO-4: Nesting Bird Surveys and Avoidance.** If vegetation removal, construction, or grading activities are planned to occur within the active nesting bird season (February 15 through September 15), a qualified biologist shall conduct a preconstruction nesting bird survey no more than 5 days prior to the start of such activities. The nesting bird survey shall include the project site and areas immediately adjacent to the site that could potentially be affected by project-related activities such as noise, vibration, increased human activity, and dust, etc. For any active nest(s) identified, the qualified biologist shall establish an appropriate buffer zone around the active nest(s). The appropriate buffer shall be determined by the qualified biologist based on species, location, and the nature of the proposed activities. Project activities shall be avoided within the buffer zone until the nest is deemed no longer active by the qualified biologist.

## CRITICAL HABITAT

The project would not result in any impacts to critical habitat, and no additional mitigation is required.

## JURISDICTIONAL AQUATIC RESOURCES

The project proposes to convert an open trapezoidal segment of Peoples Ditch (an excavated irrigation canal) to a 66-inch-diameter below-ground pipe culvert which would terminate approximately 20 feet short of the existing pipe culvert that runs under State Route 198. Approximately 0.50 acre of the irrigation canal would be undergrounded as part of the project.

As previously discussed, Peoples Ditch does not meet the definition of a jurisdictional water of the United States pursuant to the *Navigable Waters Protection Rule* (EPA and DOA 2020), effective June 22, 2020. Furthermore, Peoples Ditch does not meet the wetland criteria outlined in the *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* (SWRCB 2019), which excludes agricultural ditches with ephemeral flow that are not a relocated water of the state or excavated in a water of the state. Nevertheless, Peoples Ditch may fall within the jurisdiction of CDFW under Section 1602 of the California Fish and Game Code and the RWQCB under the California Water Code (e.g., the Porter-Cologne Water Quality Control Act). Furthermore, given the recent substantial changes in operable definitions that have occurred and may continue to occur, and considering the regulatory revisions and potential court actions, it is not possible to definitively predict the regulations that will be in place at the time of a particular jurisdictional determination or permit action by the USACE. Under currently effective Clean Water Act regulations and guidance, the USACE reserves the right to regulate certain resources on a case-by-case basis. Therefore, Regulatory Compliance Measure BIO-1 is recommended.

**Regulatory Compliance Measure BIO-1:**

**Agency Coordination for Peoples Ditch.** Prior to any modifications to Peoples Ditch, it is recommended to consult with the USACE, CDFW, and RWQCB to verify the feature's jurisdictional status and obtain applicable permit(s) and/or authorization(s). A notification of streambed alteration should be submitted to the California Department of Fish and Wildlife in accordance with Section 1602 of the California Fish and Game Code. Unless categorically excluded under effective definitions or existing documentation confirms that no permit is needed, the Central Valley RWQCB and Sacramento District of the USACE should be consulted regarding potential permitting needs under the California Water Code and federal Clean Water Act, respectively, associated with the proposed Peoples Ditch modifications.

Implementing applicable permit measures would prevent or compensate for impacts on jurisdictional aquatic resources. Considering the status of Peoples Ditch as a constructed and maintained irrigation canal and the lack of natural drainages, riparian areas, and wetlands on the project site, the project would not result in a substantial adverse effect on state or federally protected wetlands through direct removal, filling, hydrological interruption, or by other means. The impact is considered less than significant.

## **WILDLIFE MOVEMENT AND HABITAT CONNECTIVITY**

The wildlife species that occur in the project vicinity are adapted to the urban-wildland interface, and the project would not introduce new affects to the area. The noise, vibration, light, dust, or human disturbance within construction areas would only temporarily deter wildlife from using areas in the immediate vicinity of construction activities. These indirect effects could temporarily alter migration behaviors, territories, or foraging habitats in select areas. However, because these are temporary effects, it is likely that wildlife already living and moving in close proximity to urban development would alter their normal functions for the duration of the project construction and then re-establish these functions once all temporary construction effects have been removed. The proposed project would not place any permanent barriers within any known wildlife movement corridors or interfere with habitat connectivity. The impact is considered less than significant, and no additional mitigation is required.

## **REGIONAL HABITAT CONSERVATION PLANS AND LOCAL POLICIES**

- 5.5.1 Natural Habitat: Goal 04: Protection of natural habitat and other biological resources.
  - o *Policy 031 Provision of Open Space Areas:* Preserve and enhance open space area.

Consistency Analysis: The project site is located within the Highway Commercial land use designation and is isolated from open space areas; therefore the project is considered consistent with this policy.

- o *Policy 032 Wetland and Riparian Corridor:* Where appropriate and feasible, establish permanent mechanisms to protect wetlands and riparian corridors.

Consistency Analysis: The project is not located within wetlands or riparian corridors; therefore the project is considered consistent with this policy.

- o *Policy 033 Vernal Pools:* Identify and protect vernal pools that be located in Planning Area.

Consistency Analysis: Vernal pools are not located within the project site; therefore the project is considered consistent with this policy.

- o *Policy 035 Impacts from Development:* Ensure that potential impacts to biological resources and sensitive habitat are carefully evaluated when considering development projects.

Consistency Analysis: No sensitive or special-status natural communities occur on the project site. An appropriately-timed field survey and biological resources assessment were conducted on the project site to determine the likelihood and suitability of sensitive habitat and species; the project is not likely to result in significant impacts on sensitive resources with the implementation of recommended measures. Therefore, the project is considered consistent with this policy.

- o *Policy 037 Mature Trees:* Promote the preservation of existing mature trees and encourage the planting of appropriate shade trees in new developments.

Consistency Analysis: The development plan includes the removal of one nonnative tree. The project will include the planting of trees as part of the landscaping plan, resulting in an overall increase in shade trees within the project area. Therefore, the project is considered consistent with this policy.

- o *Policy 038 Native Tree Species and Drought Tolerant Vegetation:* Encourage the planting of native tree species and drought-tolerant vegetation.

Consistency Analysis: The landscaping plan will be provided in accordance with Section 17.52 Landscape Standards of the Hanford Municipal Code; all species of trees shall be selected from a list approved by the City's Parks Division. Therefore, the project is considered consistent with this policy.

- 5.5.2 Wildlife and Sensitive Species

- o *Policy 039 Endangered Wildlife and Habitat:* Establish programs in connection with environmental review processes to protect endangered wildlife and their habitats.

Consistency Analysis: An appropriately-timed field survey and literature reviews were conducted for the project in support of the CEQA review process. Based on the analysis and with implementation of the recommended mitigation measures contained herein, it is unlikely that any endangered species would be adversely affected by the project. Therefore, the project is considered consistent with this policy.

- o *Policy 040 Sensitive Wildlife:* Work with state, federal, and local agencies on the preservation of sensitive wildlife species in the City.

Consistency Analysis: Implementation of recommended Mitigation Measures BIO-1 through BIO-4, as described above, would ensure consistency with applicable resource agency policies with regard to sensitive wildlife species determined to have potential of occurring on the project site. Therefore, the project is considered consistent with this policy.

With implementation of the recommended mitigation measures listed above, the proposed project would not conflict with any regional habitat conservation plan or local policies related to the protection and conservation of biological resources.

## CONCLUSION

Based on field observations coupled with the habitat suitability analysis conducted for this assessment, the proposed project has low-to-moderate potential to impact several regionally-occurring special-status wildlife species, but is not anticipated to impact any special-status plant species, natural communities, or other habitats of concern. The implementation of the recommended mitigation measures detailed herein would ensure consistency with local policies related to biological resources, and would reduce any potentially significant impacts on special-status wildlife species to a less than significant level.



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## APPENDIX A

### FIGURES







FIGURE 2

LSA

LEGEND

Project Site



0 250 500  
FEET

SOURCE: Google Aerial Imagery (2020).

\\PTR11\images\EPI2001\GIS\Maps\Figure 2\_Project Location\_rev1.mxd (5/11/2020)

*Hanford Place Project*  
*Hanford, Kings County, California*  
**Project Location**





FIGURE 3

LSA



SOURCE: LANGDON WILSON INTERNATIONAL, 2020.

FRE10\P:\EPI2001 Hanford Place\PRODUCTS\Figure\_3.ai (4/22/2020)

Hanford Place Project  
Hanford, Kings County, California  
Site Plan





LSA

#### LEGEND

  Project Site

#### Vegetation and Land Use Type

Developed

Barren/Disturbed

Peoples Ditch- Irrigation Canal

Wild Oats and Annual Brome Grassland



0 250 500  
FEET

SOURCE: Google Aerial Imagery (2020).

\\PTR11\images\EPI2001\GIS\Maps\Figure 4\_Vegetation Map\_rev1.mxd (6/10/2021)

FIGURE 4

*Hanford Place Project*  
*Hanford, Kings County, California*  
**Vegetation Map**





FIGURE 5

LSA

LEGEND

Project Site

Soil Type

149-Nord complex, 0 to 2 percent slopes MLRA 17

167- Urban land



0 250 500  
FEET

SOURCE: Google Aerial Imagery (2020).

\\PTR11\images\EPI2001\GIS\Maps\Figure 5\_Soils Map.mxd (4/30/2020)

*Hanford Place Project*  
*Hanford, Kings County, California*  
**Soils Map**

## APPENDIX B

### PLANT SPECIES OBSERVED

The table below contains a list of plant species identified on the project site by LSA Biologist Kelly McDonald on April 27, 2020.

### Plant Species Observed

| EUDICOTS                         |                            |
|----------------------------------|----------------------------|
| <b>Amaranthaceae</b>             | <b>Amaranth family</b>     |
| * <i>Amaranthus albus</i>        | pigweed amaranth           |
| <b>Asteraceae</b>                | <b>Sunflower Family</b>    |
| * <i>Erigeron bonariensis</i>    | flax-leaved horseweed      |
| <i>Erigeron canadensis</i>       | Canadian horseweed         |
| <i>Gnaphalium palustre</i>       | Western marsh cudweed      |
| <i>Helianthus annuus</i>         | common sunflower           |
| * <i>Lactuca serriola</i>        | prickly lettuce            |
| <i>Matricaria discoidea</i>      | pineapple weed             |
| * <i>Silybum marianum</i>        | milk thistle               |
| * <i>Soncus asper</i>            | spiny sow-thistle          |
| <b>Boraginaceae</b>              | <b>Borage family</b>       |
| <i>Amsinckia menziesii</i>       | common fiddleneck          |
| <b>Brassicaceae</b>              | <b>Mustard Family</b>      |
| * <i>Capsella bursa-pastoris</i> | Shepherd's purse           |
| * <i>Hirschfeldia incana</i>     | shortpod mustard           |
| * <i>Lepidium didymum</i>        | lesser swine cress         |
| * <i>Raphanus raphanistrum</i>   | wild radish                |
| * <i>Sisymbrium altissimum</i>   | tumble mustard             |
| * <i>Sisymbrium irio</i>         | London rocket              |
| <b>Chenopodiaceae</b>            | <b>Goosefoot Family</b>    |
| * <i>Salsola tragus</i>          | Russian thistle            |
| <b>Geraniaceae</b>               | <b>Geranium Family</b>     |
| * <i>Erodium malacoides</i>      | Mediterranean storks' bill |
| <b>Fabaceae</b>                  | <b>Legume Family</b>       |
| * <i>Melilotus albus</i>         | whitesweet clover          |
| * <i>Melilotus indicus</i>       | yellow sweetclover         |
| <i>Trifolium willdenovii</i>     | Tomcat clover              |
| <b>Malvaceae</b>                 | <b>Mallow Family</b>       |
| * <i>Malva parviflora</i>        | cheeseweed mallow          |
| <b>Polygonaceae</b>              | <b>Buckwheat Family</b>    |
| <i>Persicaria lapathifolia</i>   | common knotweed            |
| * <i>Rumex crispus</i>           | curly dock                 |
| <b>Phrymaceae</b>                | <b>Lopseed Family</b>      |
| <i>Erythranthe guttata</i>       | common monkeyflower        |
| <b>Solanacea</b>                 | <b>Nightshade Family</b>   |

### Plant Species Observed

|                                              |                      |
|----------------------------------------------|----------------------|
| * <i>Solanum elaeagnifolium</i>              | white-horse nettle   |
| <b>Simaroubaceae</b>                         | <b>Quassi Family</b> |
| * <i>Ailanthus altissima</i>                 | tree of heaven       |
| <b>MONOCOTS</b>                              |                      |
| <b>Poaceae</b>                               | <b>Grass Family</b>  |
| * <i>Avena barbata</i>                       | wild oat             |
| * <i>Bromus diandrus</i>                     | ripgut grass         |
| * <i>Bromus madritensis ssp. rubens</i>      | red brome            |
| * <i>Bromus madritensis ssp. madritensis</i> | foxtail chess        |
| * <i>Bromus tectorum</i>                     | cheat grass          |
| * <i>Hordeum murinum</i>                     | foxtail barley       |
| * <i>Polypogon monspeliensis</i>             | rabbitsfoot grass    |
| * <i>Sorghum halepense</i>                   | Johnsongrass         |

\* = nonnative species

## APPENDIX C

### REPRESENTATIVE SITE PHOTOS





Site overview showing disturbed areas and wild oats and annual brome grassland vegetation. Photo taken facing east from the central portion of the project site, east of Peoples Ditch. April 27, 2020.



The southwest portion of the project site supports wild oats and annual brome grassland vegetation. Photo taken facing west near Highway 198, near the southwestern corner of the project site. April 27, 2020.



View of Peoples Ditch and barren areas, facing northwest. A single tree (*Ailanthus altissima*; nonnative species) is present on the project site. April 27, 2020.



View of Peoples Ditch and barren areas, facing west. April 27, 2020.



View of Peoples Ditch, facing south near the Campus Drive culvert outfall. April 27, 2020.



View of existing Peoples Ditch culvert inlet that goes underneath Highway 198, facing south. Visible signs of debris and human disturbance were observed within the canal. April 27, 2020.





Site overview showing disturbed/barren areas, debris, and wild oats and annual brome grassland vegetation. Photo taken facing east from the northeastern corner of the project site. April 27, 2020.



Site overview showing disturbance from off-highway vehicle use, foot paths, and wild oats and annual brome grassland vegetation. Photo taken facing east near the northern portion of the project site. April 27, 2020.



One of several burrows located in the barren areas surrounding Peoples Ditch. No burrowing owl or kit fox sign was detected at any of the observed burrows. April 27, 2020.



View of the northeastern portion of the project site showing the worn foot path and wild oats and annual brome grassland vegetation, near the railroad tracks. April 27, 2020.

## APPENDIX D

### SPECIAL-STATUS SPECIES IDENTIFIED AS POTENTIALLY OCCURING IN THE PROJECT VICINITY

**Table D-1: Special-Status Plant Species Potentially Occurring in the Project Vicinity**

| Common Name          | Scientific Name                                       | Status                       | General Habitat Description                                                                                                                                                               | Flowering Period | Likelihood of Occurrence and Rationale                                                                                                                                                                                                                                                                             |
|----------------------|-------------------------------------------------------|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Earliart orache      | <i>Atriplex cordulata</i><br><i>var. erecticaulis</i> | US: –<br>CA: –<br>CNPS: 1B:2 | Annual herb occurring in valley and foothill grassland between 40 and 100 m in elevation. Kings, Kern and Tulare counties.                                                                | August-September | <b>Not Expected.</b> There are no known historical records of occurrence in the project vicinity <sup>1</sup> and suitable habitat is limited in the project area; the maintained nature of the project area reduces the likelihood of occurrence.                                                                 |
| Brittlescale         | <i>Atriplex depressa</i>                              | US: –<br>CA: –<br>CNPS: 1B:2 | Annual herb occurring in chenopod scrub, meadows, seeps, valley/foothill grasslands, playas and vernal pools between 1 and 320 m elevation. Found in Central Valley counties.             | April-October    | <b>Not Expected.</b> There are no known records of occurrence in the project vicinity and suitable habitat is limited in the project area; the maintained nature of the project area reduces the likelihood of occurrence.                                                                                         |
| Lesser saltscare     | <i>Atriplex minuscula</i>                             | US: –<br>CA: –<br>CNPS: 1B:1 | Annual herb occurring in chenopod scrub, valley/foothill grassland, and playas in sandy soils between 15 and 200 m in elevation. Found in Central Valley counties.                        | May-October      | <b>Low probability of occurrence.</b> There are no known records of occurrence in the project vicinity and suitable habitat is limited in the project area; the maintained nature of the project area reduces the likelihood of occurrence.                                                                        |
| Subtle orache        | <i>Atriplex subtilis</i>                              | US: –<br>CA: –<br>CNPS: 1B:2 | Annual herb occurring in valley and foothill grassland on alkaline soils between 40 and 100 m in elevation. Found in Central Valley counties.                                             | June-October     | <b>Low probability of occurrence.</b> There are no known records of occurrence in the project vicinity and suitable habitat is limited in the project area; the maintained nature of the project area reduces the likelihood of occurrence.                                                                        |
| Recurved larkspur    | <i>Delphinium recurvatum</i>                          | US: –<br>CA: –<br>CNPS: 1B:2 | Perennial herb associated with chenopod scrub, cistomante woodlands, and valley/foothill grasslands on alkaline soils between 3 and 790 m in elevation. Found in Central Valley counties. | March-June       | <b>Not expected.</b> There are no known records of occurrence in the project vicinity and suitable habitat is limited in the project area; the maintained nature of the project area reduces the likelihood of occurrence. The April 2020 survey was conducted during the typical blooming period of this species. |
| Panoche pepper-grass | <i>Lepidium jaredii</i><br><i>ssp. album</i>          | US: –<br>CA: –<br>CNPS: 1B:2 | Annual herb occurring in valley and foothill grasslands on steep slopes with clay and alkaline soils between 185 and 745 m elevation. Fresno, San Benito and San Luis Obispo counties.    | February-June    | <b>Not Expected.</b> There are no known records of occurrence in the project vicinity and suitable habitat conditions are absent in the project area.                                                                                                                                                              |



**Table D-1: Special-Status Plant Species Potentially Occurring in the Project Vicinity**

| Common Name             | Scientific Name            | Status                       | General Habitat Description                                                                                                                                                                                               | Flowering Period | Likelihood of Occurrence and Rationale                                                                                                                                                                                                           |
|-------------------------|----------------------------|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mud nama                | <i>Nama stenocarpa</i>     | US: –<br>CA: –<br>CNPS: 1B.1 | Annual/perennial herb occurring lake margins, river banks, marshes and swamps between 5 and 500 m in elevation. Found in interior southern California counties.                                                           | January-July     | <b>Not Expected.</b> There are historical records of occurrence in the project vicinity (CNDDDB 1942); however, suitable habitat is limited in the project area; the maintained nature of the project area reduces the likelihood of occurrence. |
| California alkali grass | <i>Puccinellia simplex</i> | US: –<br>CA: –<br>CNPS: 1B.2 | Annual herb occurring in chenopod scrub, vernal pools, valley/foothill grasslands, and meadows/seeps. On alkaline, vernal mesic, sinks, flats and lake margins between 2 and 930 m in elevation. Central Valley counties. | March-May        | <b>Not Expected.</b> There are no known records of occurrence in the project vicinity and suitable habitat is limited in the project area; the maintained nature of the project area reduces the likelihood of occurrence.                       |

<sup>1</sup>Project vicinity = Project area plus a 5 mile buffer

Status: Federal Endangered (FE), Federal Threatened (FT), Federal Candidate (FC), Federal Proposed (FP, FPE, FPT), Federal Delisted (FD), California Endangered (CE), California Threatened (CT), California Species of Special Concern (SSC), California Fully Protected Species (CFP), California Special Plant (CSP), California Special Animal (CSA)

California Native Plant Society Designations:

1B = Rare, threatened, or endangered in California and elsewhere

2B = Rare, threatened, or endangered in California, but not elsewhere

0.1 = seriously endangered

0.2 = fairly endangered

CA = California

CNPS = California Native Plant Society

ft = foot/feet

m = meter/meters

mi = mile/miles

US = United States

**Table D-2: Special-Status Animal Species Potentially Occurring or Known to Occur in the Project Vicinity**

| Common Name                       | Scientific Name                          | Status Listing     | Habitat and Comments                                                                                                                                                                                                          | Likelihood of Occurrence and Rationale                                                                                                                                                                                                                                                                     |
|-----------------------------------|------------------------------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>INVERTEBRATES</b>              |                                          |                    |                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                            |
| Valley elderberry longhorn beetle | <i>Desmocerus californicus dimorphus</i> | US: FT<br>CA: –    | Requires elderberry trees, usually in riparian ecosystems, as host sources for breeding and forage.                                                                                                                           | <b>Not Expected.</b> There are no known records of occurrence in the project vicinity and suitable habitat is absent in the project area.                                                                                                                                                                  |
| San Joaquin tiger beetle          | <i>Cicindela tranquebarica ssp.</i>      | US: –<br>CA: –     | Known only to occur in Tulare and Kings counties.                                                                                                                                                                             | <b>Not Expected.</b> There are no known records of occurrence in the project vicinity and suitable habitat is absent in the project area.                                                                                                                                                                  |
| vernal pool fairy shrimp          | <i>Branchinecta lynchi</i>               | US: FT<br>CA: –    | Occurs only in vernal pools or vernal pool-like habitats and does not occur in riverine, marine, or other permanent bodies of water.                                                                                          | <b>Not expected.</b> There are no known records of occurrence in the project vicinity and suitable habitat is absent in the project area.                                                                                                                                                                  |
| vernal pool tadpole shrimp        | <i>Lepidurus packardii</i>               | US: FE<br>CA: –    | Occurs only in ephemeral freshwater habitats, including alkaline pools, clay flats, vernal lakes, vernal pools, vernal swales, and other seasonal wetlands.                                                                   | <b>Not expected.</b> There are no known records of occurrence in the project vicinity and suitable habitat is absent in the project area.                                                                                                                                                                  |
| <b>AMPHIBIANS</b>                 |                                          |                    |                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                            |
| California tiger salamander       | <i>Ambystoma californiense</i>           | US: FT<br>CA: CT   | Located in riparian woodlands and valley/foothills grasslands. Requires underground refuges, especially ground squirrel burrows, and vernal pools or other seasonal water sources for breeding.                               | <b>Not expected.</b> There are no known records of occurrence in the project vicinity and minimal suitable habitat is present.                                                                                                                                                                             |
| Western spadefoot                 | <i>Spea hammondi</i>                     | US: FCT<br>CA: SSC | Occurs primarily in grassland and other relatively open habitats. Found in elevations ranging from sea level to 4,500 ft. Requires temporary pools for breeding.                                                              | <b>Low probability of occurrence.</b> There are no known records of occurrence in the project vicinity and minimal suitable habitat is present within the canal and the surrounding grassland. However, debris and human disturbance were observed within the canal limiting the likelihood of occurrence. |
| <b>REPTILES</b>                   |                                          |                    |                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                            |
| California glossy snake           | <i>Arizona elegans occidentalis</i>      | US:-<br>CA: SSC    | Occurs in low-elevation arid scrub, open woodland, grasslands, and chaparral slope habitats throughout the southwest and into Mexico. Dependent on diurnal lizards for major food source, small reptiles, birds, and mammals. | <b>Low probability of occurrence.</b> There are no known records of occurrence in the project vicinity and minimal suitable habitat is present.                                                                                                                                                            |
| Blunt-nosed leopard lizard        | <i>Gambella sila</i>                     | US: FE<br>CA: CE   | Prefers sparsely vegetated arid grasslands and brush/scrub where there are abundant rodent burrows. Rare or absent in dense vegetation or tall grass.                                                                         | <b>Low probability of occurrence.</b> There are no known records of occurrence in the project vicinity and suitable habitat is largely absent in the project area due to high, dense vegetation. Human disturbance also limits the likelihood of occurrence.                                               |

**Table D-2: Special-Status Animal Species Potentially Occurring or Known to Occur in the Project Vicinity**

| Common Name          | Scientific Name                        | Status Listing    | Habitat and Comments                                                                                                                                                                                                                         | Likelihood of Occurrence and Rationale                                                                                                                                                                                                                                                                                                                                           |
|----------------------|----------------------------------------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Western pond turtle  | <i>Emys marmorata</i>                  | US: –<br>CA: SSC  | Occurs in ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6000 ft elevation. Upland habitat is needed for basking and breeding.                                                               | <b>Very low probability of occurrence.</b> There are no known records of occurrence in the project vicinity and only marginally suitable habitat is present within the canal and the surrounding grassland. However, debris and human disturbance were observed within the canal, and the ephemeral flow regime limit the likelihood of occurrence.                              |
| <b>BIRDS</b>         |                                        |                   |                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                  |
| Tricolored blackbird | <i>Agelaius tricolor</i>               | US: –<br>CA: CT   | Occurs in open country or marshes in large colonies mainly in CA Central Valley. Breeds in freshwater marshes with tall emergent vegetation, feeds on insects.                                                                               | <b>Not Expected.</b> There are no known records of occurrence in the project vicinity and suitable habitat is absent in the project area.                                                                                                                                                                                                                                        |
| Burrowing owl        | <i>Athene cunicularia</i>              | US: –<br>CA: SSC  | Burrows in open, dry, annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably the California ground squirrel.                   | <b>Moderate probability of occurrence.</b> There are no known occurrences on the project site and marginally suitable habitat is present in the project area. Several small mammal burrows were unoccupied during the April 2020 survey, and no owl sign was observed. Known burrow sites in the Hanford region were occupied at the time of the April 2020 survey (eBird 2020). |
| Swainson's hawk      | <i>Buteo swainsoni</i>                 | US: –<br>CA: CT   | Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannas, and agricultural/ranch lands. Requires adjacent suitable foraging areas such as grasslands, alfalfa, or grain fields supporting rodent populations. | <b>Moderate probability of foraging; Low probability of nesting.</b> There are historical records of occurrence in the project vicinity (CNDDDB 2012, 2016) where nesting occurred. The project area does contain one tree that could provide suitable nesting habitat. The surrounding grassland could also provide suitable foraging habitat.                                  |
| Western snowy plover | <i>Charadrius alexandrinus nivosus</i> | US: FT<br>CA: SSC | Inhabits sandy beaches, salt pond levees & shores of large alkali lakes. Nests on sandy, gravelly or friable soils.                                                                                                                          | <b>Low probability of occurrence.</b> There are no known records of occurrence in the project vicinity and suitable nesting habitat is restricted to the top of the canal. However, debris and human disturbance were observed within project area limiting the likelihood of occurrence.                                                                                        |



**Table D-2: Special-Status Animal Species Potentially Occurring or Known to Occur in the Project Vicinity**

| Common Name             | Scientific Name                          | Status Listing   | Habitat and Comments                                                                                                                                                                                             | Likelihood of Occurrence and Rationale                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------|------------------------------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Yellow-headed blackbird | <i>Xanthocephalus xanthocephalus</i>     | US: –<br>CA: SSC | Known to inhabit marshes and riparian areas in the Central Valley.                                                                                                                                               | <b>Not Expected.</b> There are no known records of occurrence in the project vicinity and suitable habitat is absent in the project area.                                                                                                                                                                                                                                                                                                                                                    |
| <b>MAMMALS</b>          |                                          |                  |                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Tipton kangaroo rat     | <i>Dipodomys nitratoides nitratoides</i> | US: FE<br>CA: CE | Inhabits open lands with sparse wood shrubs and low cover of annual grasses and forbs, alkali and saltbush scrublands.                                                                                           | <b>Low probability of occurrence.</b> There are no known records of occurrence in the project vicinity and suitable habitat is largely absent in the project area due to high, dense vegetation. Several small mammal burrows were unoccupied during the April 2020 survey, however debris and human disturbance were observed within the project area limiting the likelihood of occurrence                                                                                                 |
| Hoary bat               | <i>Lasiurus cinereus</i>                 | US: –<br>CA: CSA | Prefers open habitats or habitat mosaics with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees. Feeds primarily on moths. Requires water. | <b>Roosting Not Expected.</b> There is a historical record of occurrence in the project vicinity (CNDDDB 1991). Suitable roosting habitat is absent in the project area. Some suitable foraging habitat present in the project area.                                                                                                                                                                                                                                                         |
| San Joaquin kit fox     | <i>Vulpes macrotis mutica</i>            | US: FE<br>CA: CT | Prefers open, level areas with loose-textured soils supporting scattered, shrubby vegetation with little human disturbance. Some agricultural areas may support these foxes.                                     | <b>Moderate probability of occurrence.</b> There are historical records of occurrence in the project vicinity (CNDDDB 1975, 2000, 2006). Known to historically forage and den in the project vicinity, although there are no records in the project site and the site is isolated by existing urban development. Marginal denning habitat is present in the project site. Several small mammal burrows appeared to be unoccupied during the April 2020 survey, and no fox sign was observed. |

<sup>1</sup>Project vicinity = Project area plus a 5 mile buffer

Status: Federal Endangered (FE), Federal Threatened (FT), Federal Candidate (FC), Federal Proposed (FP, FPE, FPT), Federal Delisted (FD), California Endangered (CE), California Threatened (CT), California Species of Special Concern (SSC), California Fully Protected Species (CFP), California Special Animal (CSA)

ft = foot/feet

m = meter/meters

mi = mile/miles

US = United States

CA = California

---

## APPENDIX C

### CULTURAL RESOURCE INVENTORY

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# **Cultural Resource Inventory for the Hanford Place Medical and Mixed-Use Property Project in the City of Hanford, Kings County, California**

Diana T. Dyste, Jessica Jones, Dennis McDougall,  
Ward Stanley, and Carlos van Onna

Prepared By



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August 2020  
draft



## MANAGEMENT SUMMARY

Applied EarthWorks, Inc. (Æ), at the request of the Hanford Group and under subcontract to Epic Management Group, Inc., completed a cultural resource inventory for the Hanford Place Medical and Mixed-Use Property Project (Project) in Kings County, California. The Project proposes the construction of 15 buildings and structures that will be utilized for medical outpatient clinic services, hospitality, specialized education, retail, medical offices, skilled nursing and assisted living facilities, and multifamily housing. Project activities that could cause ground disturbance include grading; trenching for installation of water, sewer, and electrical infrastructure; construction of a roundabout; and excavation of a storm water retention basin in addition to construction of buildings, structures, and facilities.

The Project must comply with the California Environmental Quality Act (CEQA), which mandates that government agencies consider the impacts of their actions on the environment, including cultural resources. This report documents whether historical resources, as defined by the CEQA Guidelines, would be adversely impacted by the proposed Project. Æ's cultural resource inventory included a records search at the California Historical Resources Information System Southern San Joaquin Valley Information Center at California State University, Bakersfield; a review of historic maps, aerial photographs, and atlases; a search of the Native American Heritage Commission's (NAHC) Sacred Lands File; nongovernmental outreach to local Native American representatives identified by the NAHC; a buried site sensitivity assessment; and an intensive pedestrian survey of the Project area to identify cultural resources observable on the ground surface.

The Southern San Joaquin Valley Information Center records search for the Project and surrounding 0.5-mile area identified nine previous investigations intersecting the Project area and five additional studies in the surrounding 0.5-mile area. One historic-era resource was identified in the Project area (a segment of Peoples Ditch) and three historic-era resources were identified in the surrounding 0.5-mile area. A search of the NAHC Sacred Lands File did not identify sacred sites in the Project area. No responses have been received in response to Æ's outreach to six Native American representatives identified by the NAHC.

Æ archaeologists conducted an intensive pedestrian survey of the Project area to identify prehistoric and historic-era cultural resources visible at the ground surface. No prehistoric sites were identified during the pedestrian survey; however, Æ recorded one isolated historic artifact (AE-4167-ISO-01) and one historic-era deposit (AE-4167-01) observed on the ground surface in the southeastern portion of the Project area.

In addition, the buried site sensitivity assessment concluded that there is high potential for the soils in previously undisturbed portions of the Project area to contain anthropogenic paleosols that may harbor intact prehistoric cultural deposits. Portions of the Project area previously disturbed by the construction of the historic-era Peoples Ditch canal and its modern realignment, or within the historic-era plow zone (up to 24 inches below the ground surface) have a much lower sensitivity for containing paleosols with intact prehistoric deposits.

To fully comply with CEQA and determine if the Project will cause a substantial adverse change in the significant qualities of a historical resource, Æ recommends additional mapping and subsurface testing of AE-4167-01 to evaluate its eligibility for inclusion in the California Register of Historical Resources, pursuant to California Public Resources Code Section 5024.1. Æ additionally recommends focused subsurface testing in areas of the site not previously disturbed by historic-era activities to confirm the presence/absence of high-sensitivity paleosols that may include intact prehistoric cultural deposits. Completion of mapping, site testing, and soil testing will allow for an adequate assessment of whether the proposed Project may cause adverse impacts to historical resources (i.e., cultural resources eligible for listing on the California Register of Historical Resources). The methods and findings of the additional study would be presented as an addendum to this report and would include cultural resource management recommendations.

Field notes and photographs are on file at Æ's office in Fresno, California. A copy of the final version of this report and associated cultural resource records will be transmitted to the Southern San Joaquin Valley Information Center for inclusion in the California Historical Resources Information System.



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# 1 INTRODUCTION

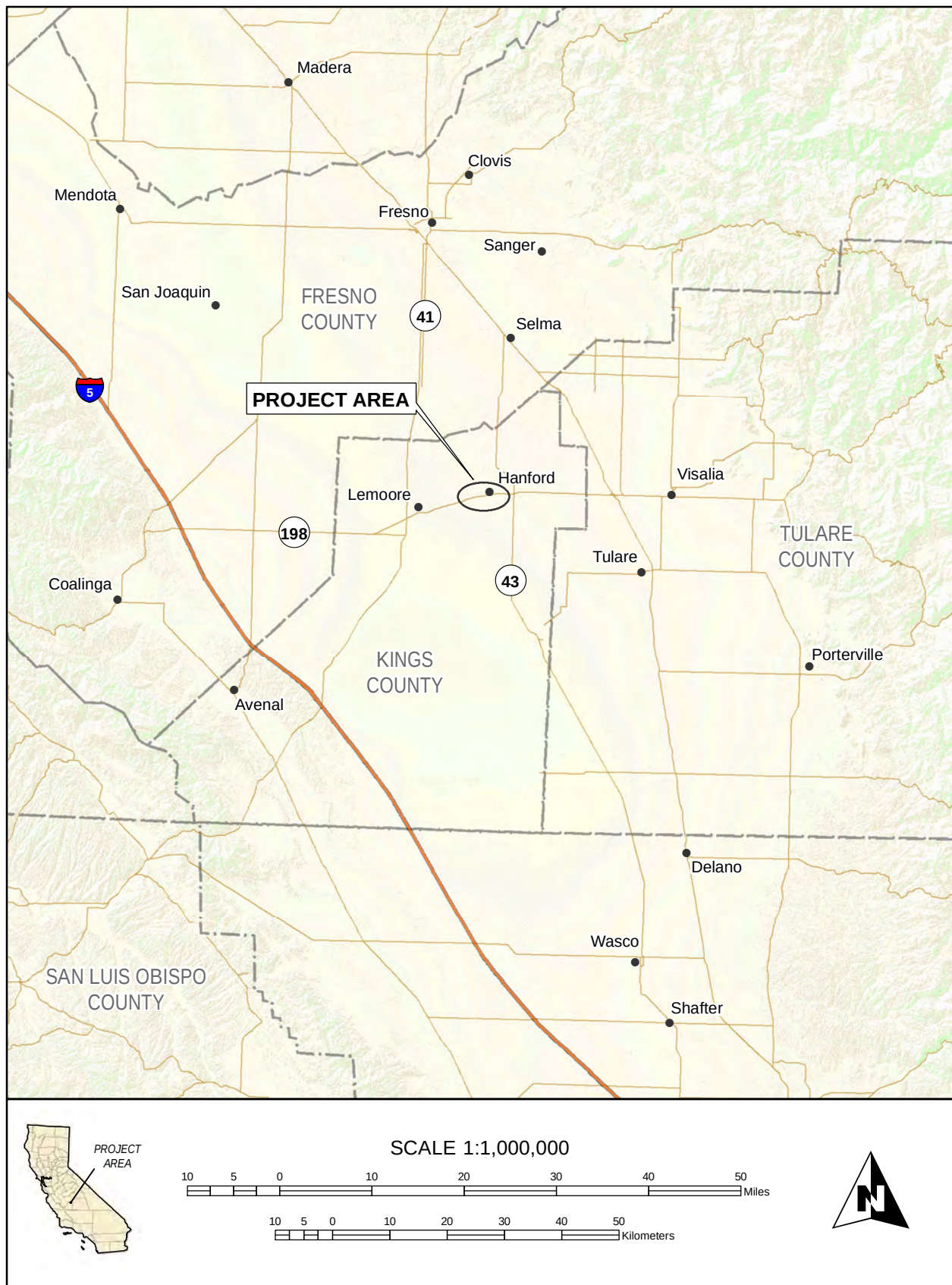
Applied EarthWorks, Inc. (Æ), under subcontract to Epic Management Group, Inc., performed a cultural resource inventory for the Hanford Place Medical and Mixed-Use Facility Project (Project) in the city of Hanford, Kings County, California (Figure 1-1). Specifically, the Project is in Section 35, Township 18 South, Range 21 East, Mount Diablo Base and Meridian (Figure 1-2). The Project includes 42.84 acres between the Burlington Northern Santa Fe Railway tracks and State Route 198 (Figure 1-3).

The Project is subject to the California Environmental Quality Act (CEQA; California Public Resources Code [PRC] Sections 21000–21189) and the CEQA Guidelines (Title 14, California Code of Regulations [CCR], Sections 15000–15387), which mandate that public agencies consider the impacts of discretionary projects on the environment, including cultural resources. If a project has the potential to cause substantial adverse change in the characteristics of an important cultural resource or “historical resource” through demolition, destruction, relocation, alteration, or other means, then the project is judged to have a significant effect on the environment (14 CCR 15064.5[b]). Sections 15064.5(a)(1–3) of the CEQA Guidelines state that a historical resource is: (1) listed or determined eligible for listing in the California Register of Historical Resources; (2) included in a local register of historical resources (pursuant to PRC Section 5020.1[k]) or identified as significant in a historical resource survey per the CRHR eligibility criteria (PRC 5024.1[c]); or (3) considered eligible by a lead agency under PRC 5020.1(j) or 5024.1. The definition subsumes a variety of resources, including prehistoric and historical archaeological sites, structures, buildings, and objects (14 CCR 15064.5[a][3] and 15064.5[c]). The City of Hanford is the lead agency for purposes of the CEQA.

## 1.1 PROJECT BACKGROUND

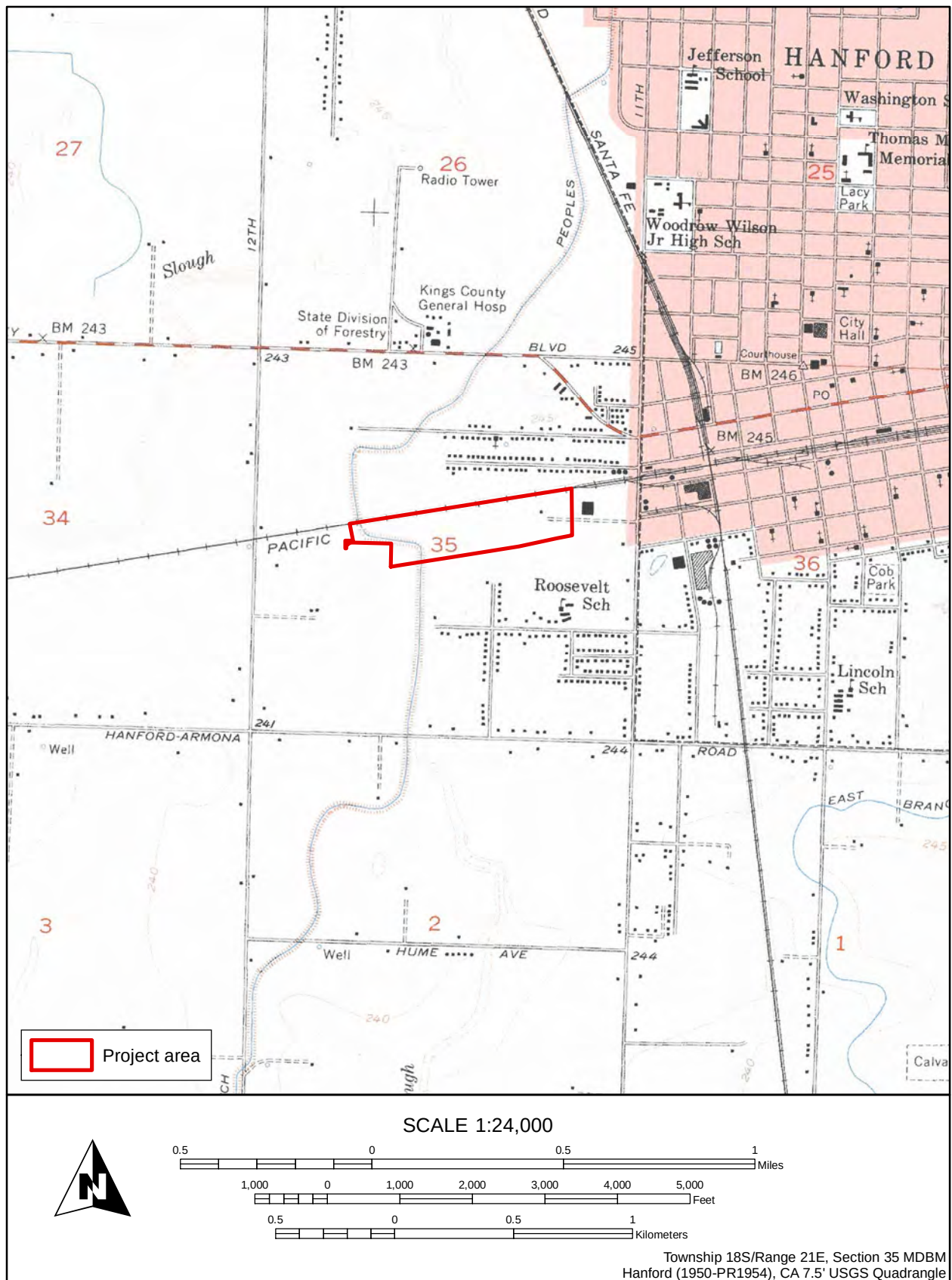
The Project proposes to construct 15 buildings, structures, and facilities that will be utilized for medical outpatient clinic services, hospitality, specialized education, retail, medical offices, skilled nursing and assisted living, and multifamily housing. Project activities with potential to cause ground disturbance would include grading; installation of water, sewer, and electrical infrastructure; construction of a roundabout; and excavation of a storm water retention basin in addition to construction of the 15 buildings and structures. The roundabout would be incorporated into the public right-of-way. Maximum depth of ground disturbance is presently undefined. Similarly, maximum height of proposed structures is not determined.

To assist the Hanford Group in fulfilling CEQA requirements for the proposed Project, Æ conducted a cultural resource inventory that included: (1) a records search at the California Historical Resources Information System (CHRIS) Southern San Joaquin Valley Information Center (SSJVIC) to identify prior cultural resource studies and previously recorded cultural resources in the Project area and surrounding 0.5-mile area; (2) desktop archival research to better understand land use and property ownership within the Project area; (3) a search of the Native American Heritage Commission’s (NAHC) Sacred Lands File and outreach with local



**Figure 1-1 Project vicinity in Hanford, California.**





**Figure 1-2 Project location on the USGS Hanford, CA 7.5-minute quadrangle.**



**Figure 1-3 Aerial view of the Project area.**



tribal representatives; (4) a pedestrian survey of the Project area to identify potential historical resources within the Project area and preliminary recordation of identified resources on the appropriate California Department of Parks and Recreation record form(s); (5) a buried site sensitivity assessment; and (6) recommendations for further work to assess whether the proposed Project would cause adverse impacts to historical resources—i.e., cultural resources eligible for listing on the California Register.

## **1.2 PROFESSIONAL QUALIFICATIONS**

Æ Senior Archaeologist Diana T. Dyste (M.A.), a Registered Professional Archaeologist (RPA 39362477), served as project manager and co-author of this report, providing quality oversight and technical guidance. Æ Senior Architectural Historian Carlos van Onna (M.A.) conducted site-specific archival research and prepared the historic context for the Peoples Ditch (P-16-000246/CA-KIN-97H). Æ Senior Archaeologist Dennis McDougall assisted van Onna with research. Æ Staff Archaeologist Ward Stanley completed the archaeological pedestrian survey and, along with Staff Archaeologist Jessica Jones, contributed to the technical report. Staff Archaeologist/GIS Technician Flavio Silva (Ph.D.) prepared maps, report graphics, and compiled the GIS data. Résumés for key personnel are provided in Appendix A.

## **1.3 REPORT ORGANIZATION**

This technical report was prepared according to California Office of Historic Preservation (1990) standards outlined in *Archaeological Resource Management Reports (ARMR): Recommended Contents and Format* and thus fulfills the requirements for the CEQA.

Following this introduction, Chapter 2 describes the natural environment, prehistoric setting, ethnography of the region, and historic setting encompassing the Project area. Chapter 3 discusses the methods used during archival research, buried site sensitivity assessment, and archaeological and built environment surveys. Research findings and results of the survey and buried site assessment are provided in Chapter 4. A summary of findings and cultural resource management recommendations are included in Chapter 5. References cited are provided in Chapter 6, followed by Appendices A–D.





## 2 PROJECT SETTING

### 2.1 NATURAL SETTING

The Project is in the San Joaquin Valley, the southern half of an elongated trough called the Great Valley. The Great Valley is a 50-mile-wide lowland that extends approximately 500 miles south from the Cascade Range to the Tehachapi Mountains (Norris and Webb 1990:412). Between the Mesozoic and Cenozoic eras, the Great Valley served as a shallow marine embayment containing numerous lakes, primarily within the San Joaquin Valley (Norris and Webb 1990:412). Waters began to diminish around 10 million years ago during the late Pliocene and eventually were cut off from the ocean altogether by the formation of the Coast Ranges, leaving tributaries and small lakes that survived until the historic era (Hill 1984:28; Norris and Webb 1990:380).

Much of the Great Valley rests upon thick strata of alluvial sediments washed down from the Sierra Nevada and Coast Ranges during the Quaternary (Norris and Webb 1990). It is this same soil that today makes the valley a fertile agricultural region. Below these levels are layers from the Pliocene and older epochs, which consist of both marine (shale, sandstone) and nonmarine (basalt, andesite) materials. Primary soils have been developed by weathering, seasonal erosion, and mass flood events that cause downward movement of granitic parent material. Secondary soils are formed by a combination of eolian and alluvial forces that have transported granitic and assorted metamorphic and metavolcanic materials along mountain streams (Weir 1956). Quaternary and recent alluvium covers most of the valley basin (Meyer et al. 2010).

The Project area is in the Tulare Lake Basin hydrologic unit, which includes a portion of one of the San Joaquin Valley's dominant hydrologic features, the Kings River. Several smaller order creeks and streams flow north into the Kings River toward Hanford, while the westward-flowing Tule River is south of Hanford. Intermittent creeks feed the Kings River, which can remain dry for long periods of the year. However, before historic drainage projects and modern reclamation, seasonal flooding from the Kings River produced extensive wetlands in the valley. Lakes, marshes, and sloughs once covered more than 3,000 square miles in the San Joaquin Valley (Moratto 1984:168). The largest of these was ancient Tulare Lake. The lake existed approximately 25 miles southwest of the Project area and spanned as much as 30 miles from shore to shore (Preston 1981). As more water was historically diverted from major streams for agricultural purposes, the shores of the lake progressively retreated. By the early twentieth century, Tulare Lake had all but disappeared except in unusually wet years when high levels of runoff are released.

The abundance of water near and within the Project area provided a rich habitat for plants and animals in prehistory and through the historic era. Common native plants would have included white and live oaks (*Quercus* spp.) as well as walnut (*Juglans* sp.), cottonwood (*Populus fremontii*), willow (*Salix* sp.), and tule (*Schoenoplectus* sp.), and possibly hardstem bulrush (*Scirpus acutus*) and cattail (*Typha* sp.). Various grasses, forbs, and sedges would have flourished in the area. A variety of animals lived in and around the Project area prior to the modern era, including mule deer (*Odocoileus hemionus*), white-tailed deer (*O. virginianus*), tule

elk (*Cervus* sp.), pronghorn (*Antilocapra americana*), grizzly bears (*Ursus arctos californicus*) and black bears (*U. americanus*) (Preston 1981:245–247). These resources provided humans with a diverse range of medicinal, dietary, and other resources used for tool production and other subsistence purposes during prehistory and the historic era.

## **2.2 CULTURAL SETTING**

### **2.2.1 Prehistory**

The San Joaquin Valley prehistoric record is among the least understood of all regions in California. Reconstruction of past cultural patterns has been stymied by two key factors: geomorphology and human activity (Dillon 2002; Siefkin 1999). The valley floor that encompasses the Project area has been inundated with thick alluvial deposits resulting from granitic and sedimentary outflow from the Kings River, particularly during mass flood events. This pattern has continued for millennia and has resulted in the burial of early- to mid-Holocene archaeological sites, estimated to be buried at depths of up to 10 meters along the lower stretches of the San Joaquin Valley drainage systems (Meyer et al. 2010; Onken 2020). Thus, compared to other regions in the state, there is a paucity of research and a related lack of data from which to build a complete understanding of past human behavior specific to the valley.

Nevertheless, available data for sites in valley lacustrine environs help identify key cultural changes within the Project area and surrounding environs. The summary of cultural traits presented below is based on a review of San Joaquin Valley lacustrine, riverine, and valley floor site data discussed in Rosenthal et al. (2007). Cultural periods and accompanying dates (given as calibrated calendar years [cal B.C. or A.D.]) are based on Rosenthal et al. (2007:150–159), Moratto (1984:333), McGuire and Garfinkel (1980:49–53), and Bennyhoff and Fredrickson’s chronologies (Fredrickson 1973, 1974).

Archaeological investigations in the Tulare Lake and Buena Vista Lake localities suggest that people occupied the San Joaquin Valley as early as 11,000–12,000 years ago (Fredrickson and Grossman 1977; Riddell and Olsen 1969). Because there has been very little systematic and thorough archaeological excavation in the immediate vicinity of the Project area, it is unclear whether the cultural phases identified in the adjacent foothills or southern valley extend to this area. Although some limited data suggest that phases developed for Yosemite National Park and Buchanan Reservoir for the most recent period of prehistory can be extended to sites in the San Joaquin Valley (Baloian et al. 2006), there is no evidence that this holds true for earlier phases.

The Paleo-Indian Period (11,500–8550 cal B.C.) is represented by ephemeral lacustrine sites dominated by atlatl dart and spear projectile points. The earliest evidence of distinct valley cultural patterns appears during the Lower Archaic Period (8550–5550 cal B.C.) when crescents and stemmed projectile points are first used and evidence appears of dietary use of freshwater fish, waterfowl, mussels, deer, and pronghorn. The Middle Archaic (5550–550 cal B.C.) includes a time, estimated between 5950–3150 cal B.C., when semipermanent villages first appear along riverbanks in tandem with larger, more established lacustrine villages. Stone tools were used in abundance, meanwhile ground stone tool kits emerged along with long-distance trade and exchange networks focused on obsidian, shell beads, and ornaments.

New cultural patterns emerged during the Upper Archaic Period (550 cal B.C. to cal A.D. 1100), especially between 3150–1350 cal B.C. when a distinct shift in burial practices occurred and geographic differences in site and artifact types appeared. The time between 1350–650 cal B.C. is marked by the sudden presence of mound sites in the valley. Widespread proliferation of specialized technology is evident, including new types of bone tools, projectile points, and ceremonial objects such as wands and blades. Paleoethnobotanical studies also suggest the use of labor-intensive and seasonally abundant resources, including acorns, pine nuts, salmon, and shellfish. Similarly, the Emergent Period, extending from cal A.D. 1000 to the historic era, is marked by continued variation in settlement and burial patterns across the valley, coupled with the disappearance of atlatl and dart tool kits that are replaced with bow-and-arrow technology (i.e., small corner-notched and Desert series projectile points) at about cal A.D. 1000. Fishing tool kits expanded to include more efficient harpoons, bone fishhooks, and gorge hooks. In the Tulare basin, pottery obtained via trade appears as well as baked clay balls used for cooking and making carved clay effigies.

### **2.2.2 Ethnohistory**

The Project area is in the Southern Valley Yokuts ethnographic territory. The Yokuts are one of eight subgroups of the Penutian linguistic phylum that is present across the western coast and inland regions of North America from Canada to Mexico (Golla 2011:128). The Yokuts had many language subgroups and spoke a variety of mutually intelligible dialects across the San Joaquin Valley and Sierra Nevada (Golla 2011). The Southern Valley Yokuts populated the shores of Tulare, Buena Vista, and Kern lakes, their connecting sloughs, and the lower portions of the Kings, Kaweah, Tule, and Kern rivers (Latta 1999; Silverstein 1978).

The Tachi Yokut, who were the northernmost of the Tulare Lake tribes, occupied a large area of the Central Valley, extending from the western shores of Tulare Lake northward to the Fresno Slough and westward to the Coast Ranges (Kroeber 1976:484). A major ethnohistoric Tachi Yokut village *Wiu* (also *Waiu*, or Mussel Slough) was just south of Lemoore. *Wiu* is at the present location of the Santa Rosa Rancheria Tachi Yokut reservation, approximately 9 miles southwest of the Project area (Kroeber 1976:484).

During the historic era, the general vicinity of Hanford was a seasonal plant, seed, and nut collection area for local tribes. The Tachi Yokut relied on the plentiful supply of lacustrine and riverine resources, including lake trout, chubs, perch, and suckers as well as turtles and freshwater shellfish. Wild seeds and acorns were harvested in the early summer and fall, respectively, and stored for use throughout the year. Waterfowl and other game attracted to the lake supplemented the Tachi Yokut diet.

Intensive European exploration of the San Joaquin Valley Yokuts territory did not take place until the early nineteenth century (Wallace 1978). As a result of European contact with Native American populations in the valley, indigenous populations were significantly reduced by disease. Native American settlement patterns within the valley were disrupted because of recruitment for Missions Soledad, San Luis Obispo, San Antonio de Padua, and San Juan Bautista. Further traumatic impacts to the valley's Native American population were caused by a series of parasitic (i.e., malaria) and viral (e.g., influenza) epidemics that began in 1833. The

diseases struck with such virulence that by 1846 an estimated 40–75 percent of Native Americans had died during outbreaks in California (Cook 1955).

Many Southern Valley Yokuts tribes have survived the effects of colonization, particularly the Santa Rosa Rancheria Tachi Yokut Tribe, which has since developed an early childhood education to college success program and has worked to preserve song, dance, and oral history traditions of the Tribe (Golla 2011:154). The Santa Rosa Rancheria Tachi Yokut Tribe is governed by General and Tribal Councils and operates auxiliary departments that serve local Native American populations in areas of governance, healthcare, education, housing, cultural resource management, and administration of the Tachi Palace Hotel and Casino. The Tribe contributes annually to the Kings County fire department, health initiatives, other community welfare programs, and state public use funding programs.

### **2.2.3 Historical Setting**

The first organized Euro-American foray into the western valley occurred in 1806 when Spanish Lieutenant Gabriel Moraga and his men explored stretches of the San Joaquin, Kings, and Kaweah rivers (Cook 1960:247–253). The most relevant exploration was the 1815 travels of Sergeant Juan de Ortega and his band, who camped at a place they called “Chenem” just after crossing the coastal mountains from the Presidio of Monterey (Cook 1960:268). Chenem, which was 32 miles southwest of the Project area, was later occupied and renamed by Mexican settlers, who referred to the place as Posa Chiné or Poso Chané. A 1932 Tulare newspaper article stated:

[At] one time, there were perhaps a dozen Spanish and Mexican families living at the old Posa. They ranged cattle and horses and a few goats. The swamp area was cultivated and they planted trees, vines, and garden truck [Clough and Secrest 1984:40].

In 1854, the Higuera family established a homestead at Posa Chiné/Poso Chané and herded cattle and stock as far as the west shore of Tulare Lake. They likely resided there until 1862–1863 when a flood destroyed the watering hole.

Ranching had been a part of the state’s economy since the Mexican period, and the industry’s growth accelerated as many successful prospectors and businessmen reinvested their profits from the gold rush in cattle and sheep herds. In the early days of ranching, sheep were a valued commodity because they not only could be sold for consumption but could be sheared for their wool. From 1857 to 1871, the amount of wool produced in California increased more than 20-fold, while revenue grew at an average annual rate of 30 percent (Vandor 1919:164). Similarly, cattle provided beef and dairy products as well as hides. Tallow can be rendered from the fat of both cattle and sheep.

In 1850, California gained statehood and the area that was to become Kings County, along with Fresno and several other counties, was part of Mariposa County. Mariposa, truly the “mother of counties,” was the largest county in the state, encompassing more than one fifth of California. Tulare County was formed from parts of Mariposa County in 1852. Kings County, as it exists today, was formed in 1893 from a portion of Tulare County.

### 2.2.3.1 Transportation and Development of Hanford

In 1877 the Southern Pacific Railway (SPR) established the city of Hanford at the site of a small Chinese shepherders' camp. The city was named after SPR executive James Madison Hanford and soon grew into a hub for railway transportation in the southern central valley (Menefee and Dodge 1913:209). As with other towns in the valley, the SPR greatly contributed to Hanford's growth in its early years of existence. City streets were aligned with the passing railroad rather than in cardinal directions (Figure 2-1). Blocks contained 32 lots ready for purchase at inflated rates from the railroad company that was granted rights to the land. While many towns in their early days were located a few blocks off the railroad where land was originally purchased at lower prices, by 1892 the town of Hanford was refocused on the rail line (Preston 1981:123–125). By the early part of the twentieth century, Hanford had a public free library, several churches of various denominations, a fire station, high school, and developed farming districts surrounding the town (Menefee and Dodge 1913:212–216).

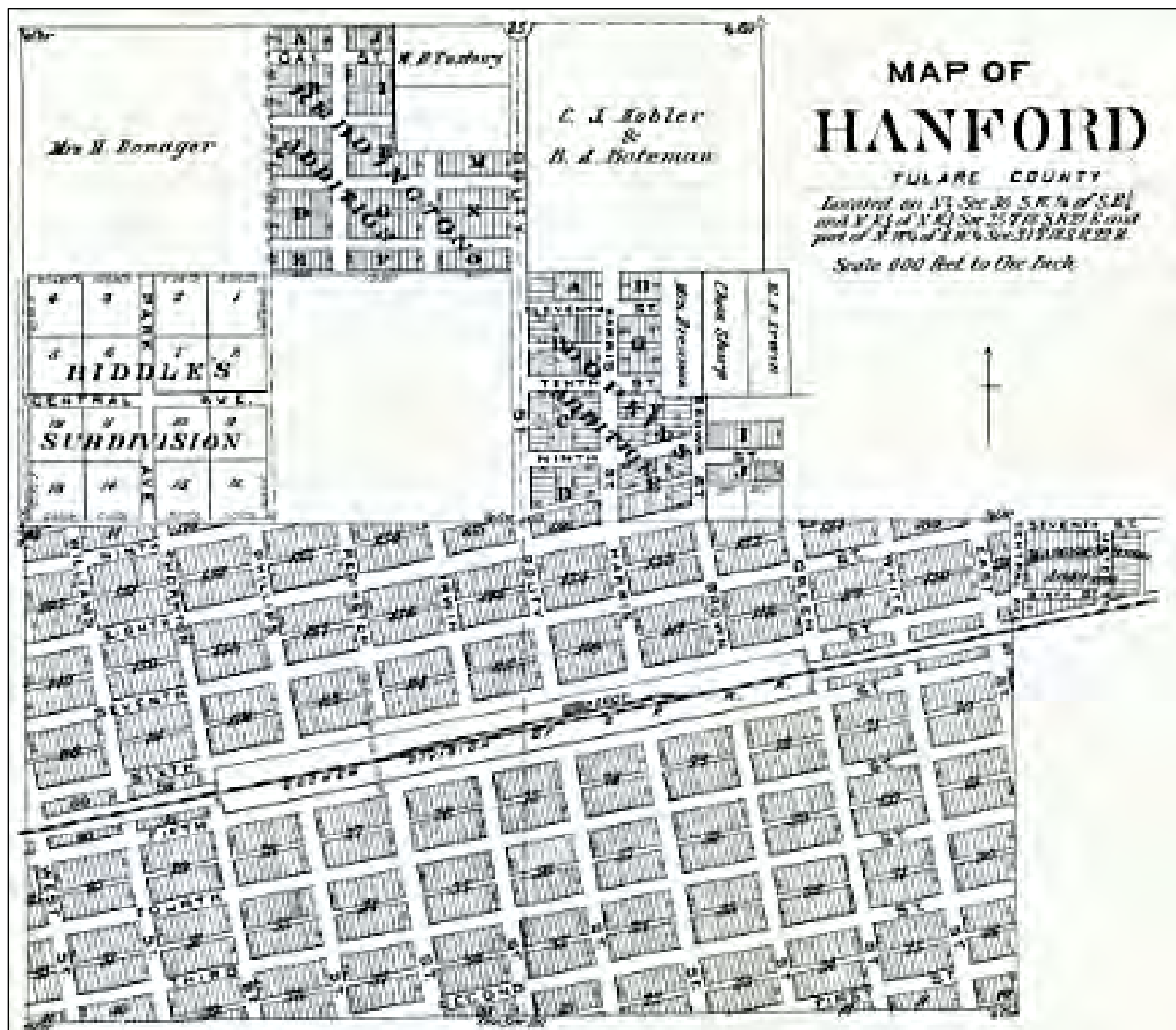


Figure 2-1 City of Hanford circa 1892 showing streets and blocks aligned to the SPR tracks (Thompson 1892:58).

### **2.2.3.2 Agriculture in the Central Valley**

Early settlers in the Tulare Lake basin area encountered hogs left from the Spanish-Mexican era. Hogs were preferred stock over wandering cattle because the animals could be fattened quickly and cuts cured for easy transport (Mitchell 1976:34–37). Large numbers of hogs were fattened in the endless tule reeds surrounding Tulare Lake, then driven to the Sierra foothills in the fall to gorge on ripened acorns (Nordhoff 1874:209). The hog industry helped sustain early Euro-American settlers, whose food supplies otherwise had to be transported by wagon from Stockton (Preston 1981:74–75).

Agriculture had been gathering its own momentum since the gold rush. Early efforts to grow wheat without a sufficient water supply met with failure. Before the 1870s and the advent of large-scale water conveyance systems, farms were generally located near a perennial water source. This constraint on early agriculture kept the valley's two major industries—farming and ranching—in balance within the economy. Competition for real estate was minimized because agricultural interests had little reason to expand into pasturelands that were unsuitable for farming.

By the early 1870s the scales began to tip in favor of agriculture. The construction of extensive irrigation systems, financed by developers like A. Y. Easterby, converted the valley's dry soils into fertile farmlands. The 1874 “no fence” law underscored the growing dominance of agricultural interests and resulted in both operational and monetary repercussions for the sheep and cattle industry:

The “no fence” law obligated the stock owner to herd his cattle and sheep, whereas before the stock roamed at will and was not assembled except for the annual rodeo. He was also made responsible for damage done by his beasts. The farmer was not required to fence his holdings, though. .. he occasionally did so [Vandor 1919:163].

The “no fence” law was a major setback to ranching; the stockman no longer had the entire extent of the San Joaquin Valley at his disposal and was now burdened with the cost of fencing in his herds and flocks. Nevertheless, the industry continued to grow within the county, albeit not at the same pace as agriculture. The cattle empire of Miller and Lux, which operated well into the twentieth century, owned as much as 145,000 acres of pastureland in Madera County (Barcroft 1933) and utilized additional grazing lands within Kings County (Roberts 2008:79).

While much of the valley was covered in wheat fields in the mid-1870s (Clough 1986), farmers had been experimenting with grape vines and citrus trees since the 1850s. By the 1880s, a nationwide glut in the grain market and attendant drop in the price of wheat caused valley farmers to shift their attention to these newer crops. In a relatively short time, large-scale vineyards and orchards had replaced wheat fields in most regions of the valley.

### **2.2.3.3 Water Conveyance**

Irrigation efforts near the city of Hanford began in the area known as “Mussel Slough,” which contained arid dry soils cut by a single slough connecting the Kings River with Tulare Lake. Early settlers saw the potential to irrigate this land before the SPR established a railroad through the area. In 1875, local citizens formed the Peoples Ditch Company and quickly began



construction on an irrigation canal through the heart of Mussel Slough country. Despite many setbacks, such as poor engineering, soft collapsing soils, and lack of capital, the Peoples Ditch canal was completed sometime in 1878 or 1879 (Menefee and Dodge 1913:192–193). A remnant segment of this canal is in the eastern half of the Project area, and a modern realignment of the Peoples Ditch intersects the Project area north–south just below Campus Drive (Figure 1-3).

Water typically has been distributed to farmers primarily at the county level through the water companies of the nineteenth century and more recently by such entities as irrigation districts. By the late 1920s and early 1930s, however, it became apparent to the state government that a valley-wide system was necessary to alleviate local shortages (JRP Historical Consulting Services and California Department of Transportation 2000:73–74). The solution was the Central Valley Project (CVP), a multicomponent water conveyance system that included, among other elements, the Delta-Mendota Canal and the Friant-Kern Canal. Funding for such a massive project was beyond the means of the local water concerns, and the State of California was unable to sell the necessary bond issues due to the monetary constraints of the depression.

The state then turned to the federal government, suggesting a role for construction of the CVP in President Franklin D. Roosevelt’s New Deal. Through a complicated series of negotiations, California officials were finally able to secure federal funding for the project, in part by promoting the project as a major job-creation undertaking—a convincing selling point during the early years of the Great Depression [JRP and Caltrans 2000:74].

Although construction of the CVP began in the late 1930s, labor and material shortages caused by World War II delayed many of the project’s components, and the final stage of construction was not completed until the 1970s.

#### **2.2.3.4 Historical Use and Development of the Project Area**

Numerous archival resources were consulted to identify historical land use and development in the Project area. These resources include General Land Office (GLO) survey plat maps (1855, 1867, and 1891); an 1892 property atlas; USGS topographic quadrangle maps (1926 and 1954); and aerial photographs from 1934, 1937, and 1942.

No historical structures or features (e.g., roads, trails, ditches) are depicted within the Project area on any of the GLO plats examined. Only an intermittent creek (Dry Creek) is shown meandering roughly east–west through the Project area on the 1855 GLO plat (Figure 2-2). However, the property atlas map (Thompson 1892:57) shows that most of the Project area consisted of agricultural land owned by H. F. Schumaker, with smaller portions owned by A. L. Cressey, H. F. Pepys, Mrs. Ada McKelvey, and J. Itin (Figure 2-3). Also depicted is a structure on the Schumaker property within the eastern portion of the Project area, and the Southern Pacific Railroad borders its northern edge. Dry Creek is shown following a southerly course through the Project area. It should also be noted that none of the property owners named above are listed in a contemporary history (Menefee and Dodge 1913) as significant contributors to the growth and development of Kings County.

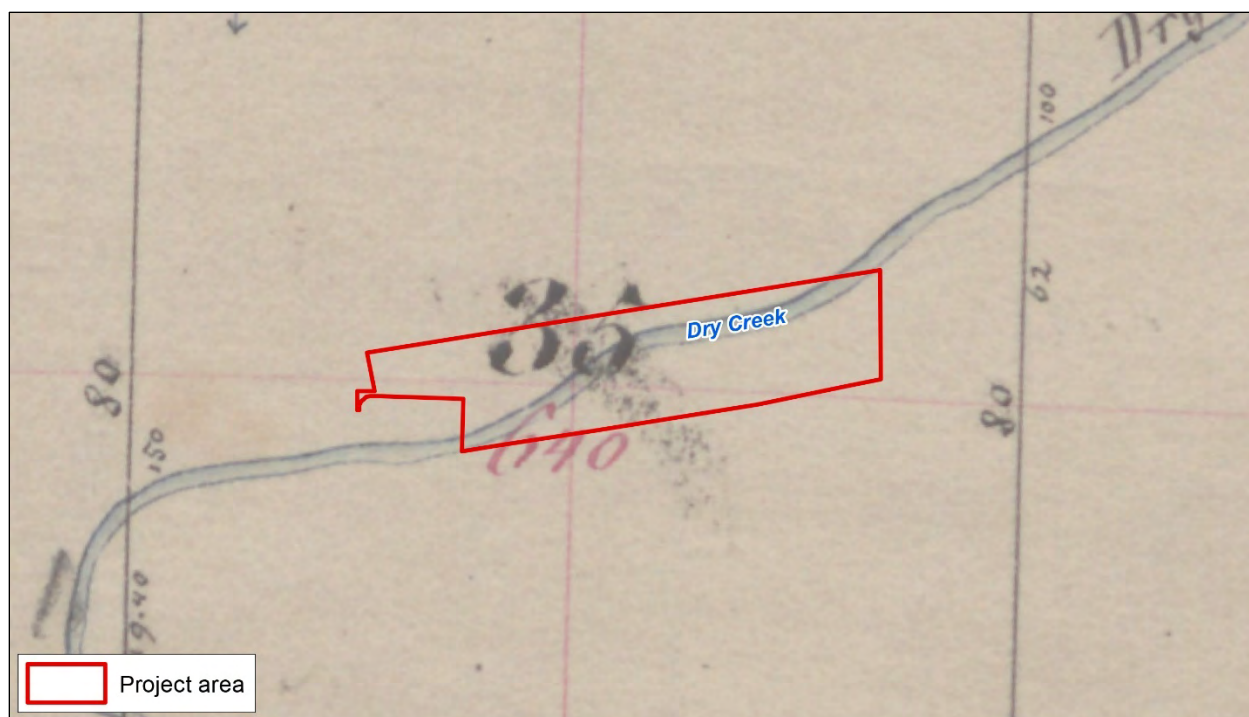


Figure 2-2 Dry Creek present within the Project area prior to irrigation, as depicted on an 1855 GLO Plat.

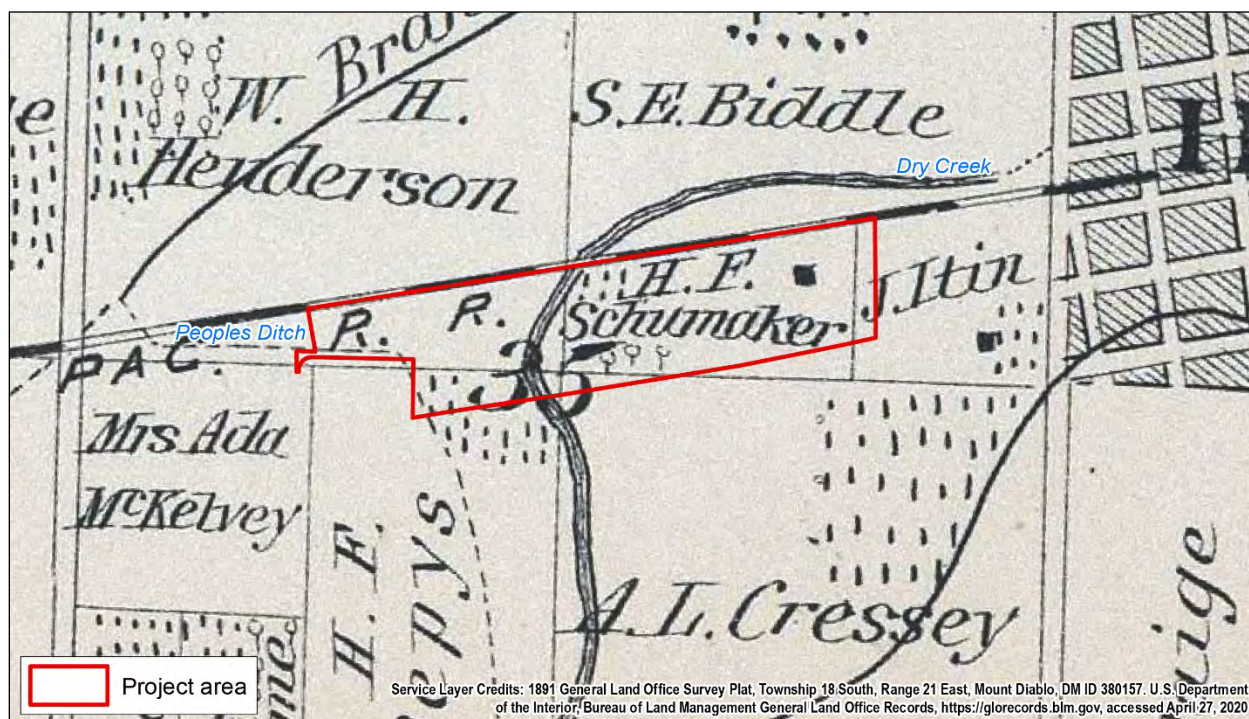
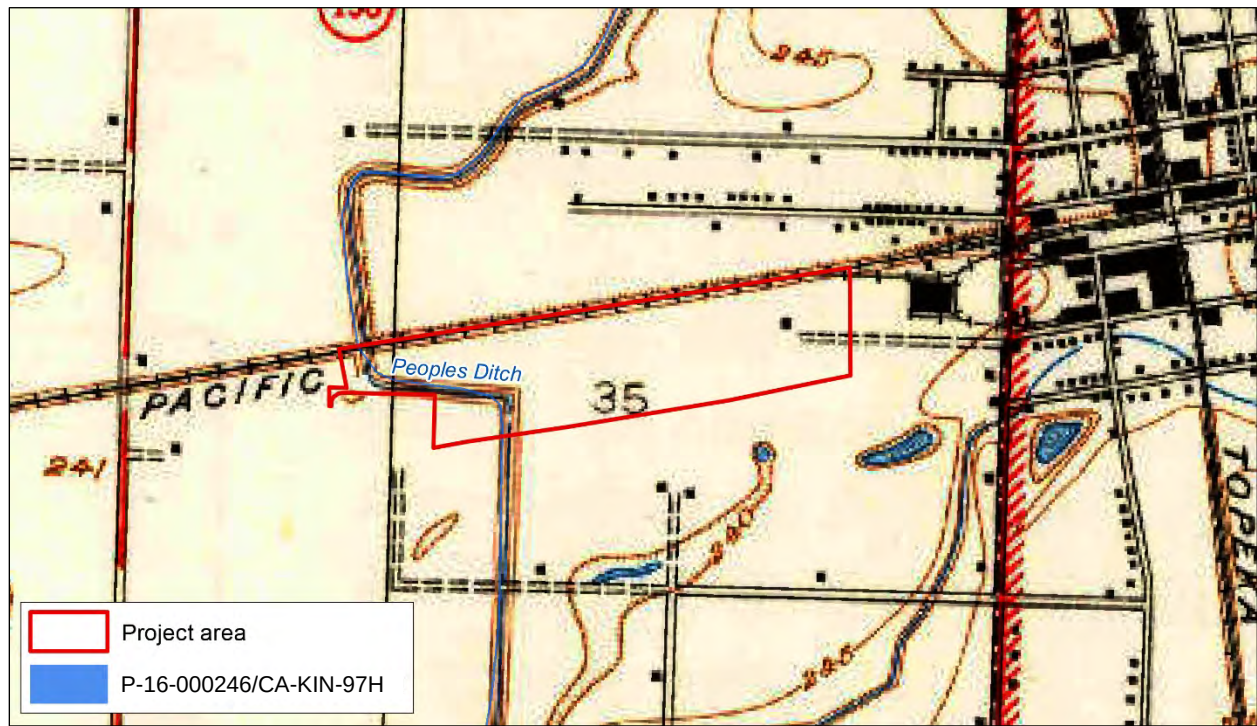


Figure 2-3 Project area on Thompson's 1892 Tulare County property atlas showing the structure on H. F. Schumaker's property.

A 1926 USGS topographic map (Figure 2-4) shows a structure within the Project area at the approximate location of the structure shown on the Schumaker property in 1892. The 1926 map



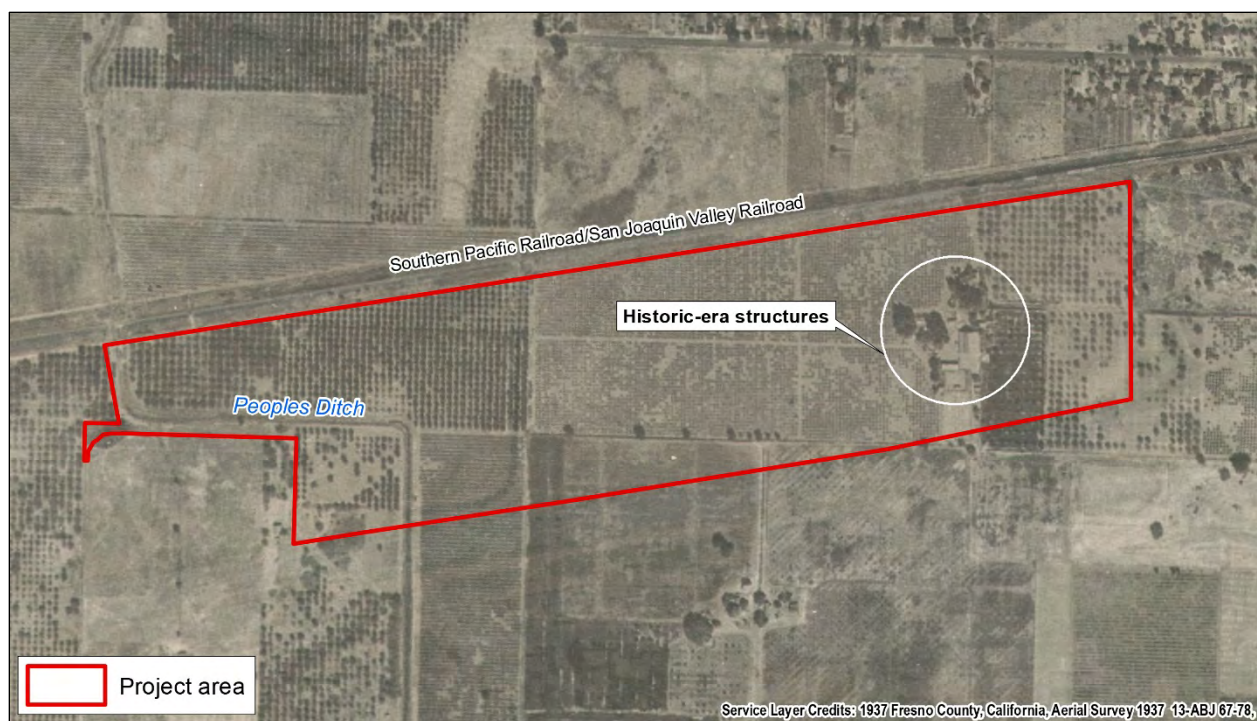
also depicts a dirt road leading to this structure from the adjacent property to the east (shown as the property owned by J. Itin in 1892; see Figure 2-3) as well as the Peoples Ditch within the western portion of the Project area and the Southern Pacific Railroad bordering its northern edge.



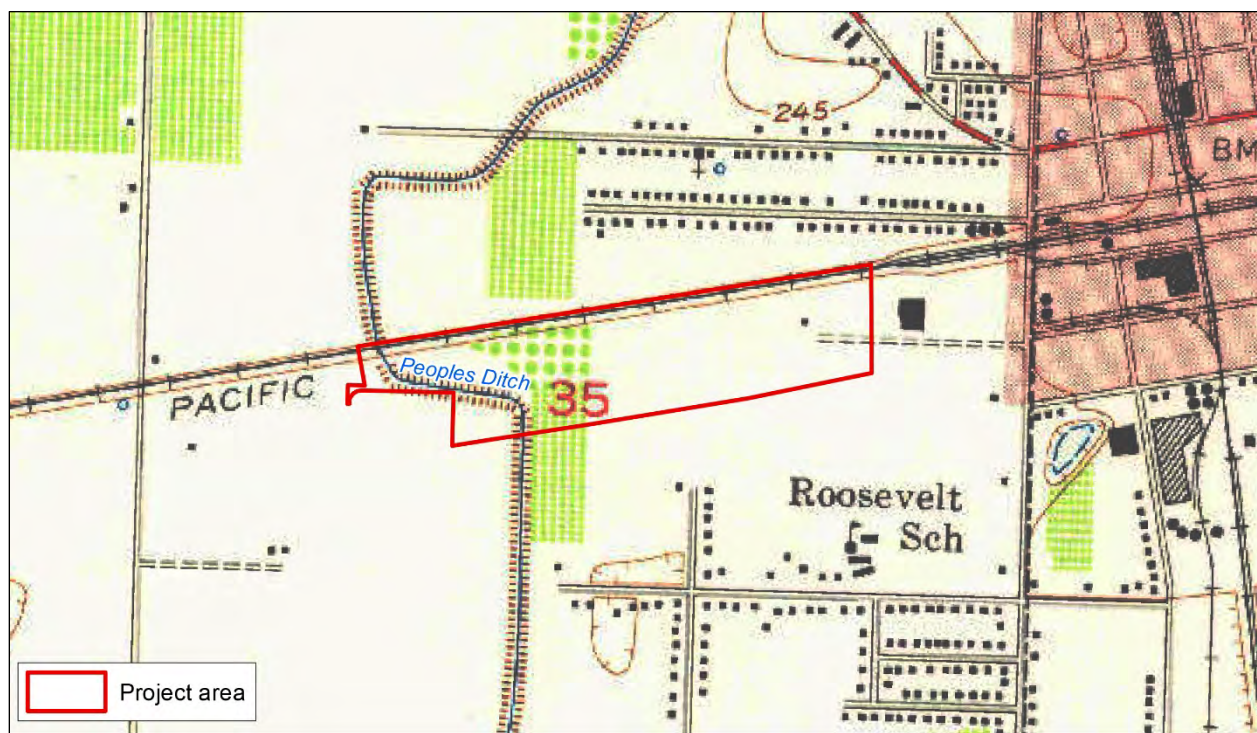
**Figure 2-4** USGS Hanford, California, 1926 topographic map showing location of the structure identified on the 1892 Tulare County atlas and the historical alignment of Peoples Ditch within the Project area.

The structure shown within the eastern portion of the Project area in 1892 and 1926, the Peoples Ditch within the western Project area, and the Southern Pacific Railroad to the north continue to be shown at their respective locations on aerial photographs from 1934, 1937 (Figure 2-5), and 1942, as well as on the USGS Hanford, California, 7.5-minute topographic quadrangle photorevised in 1954 (Figure 2-6). No other structures or features are represented within the Project area. These same archival resources show continued use of the Project area as agricultural land throughout these years.

An aerial photograph of the Project area taken in 1976 (Figure 2-7) shows agricultural activity only in the western Project area. The structure in the eastern Project area has been removed by that year. Unfortunately, archival research did not identify maps or aerial images postdating 1954 and predating 1976 that could help refine the timing of when the structure was removed from the property; however, Figure 2-7 does show that the original alignment of Peoples Ditch in the western Project area was still in use in 1976. Archival data indicate that the original alignment of Peoples Ditch was abandoned sometime between 1994 and 2003, when it was realigned to its present configuration within the Project area (see Appendix D).

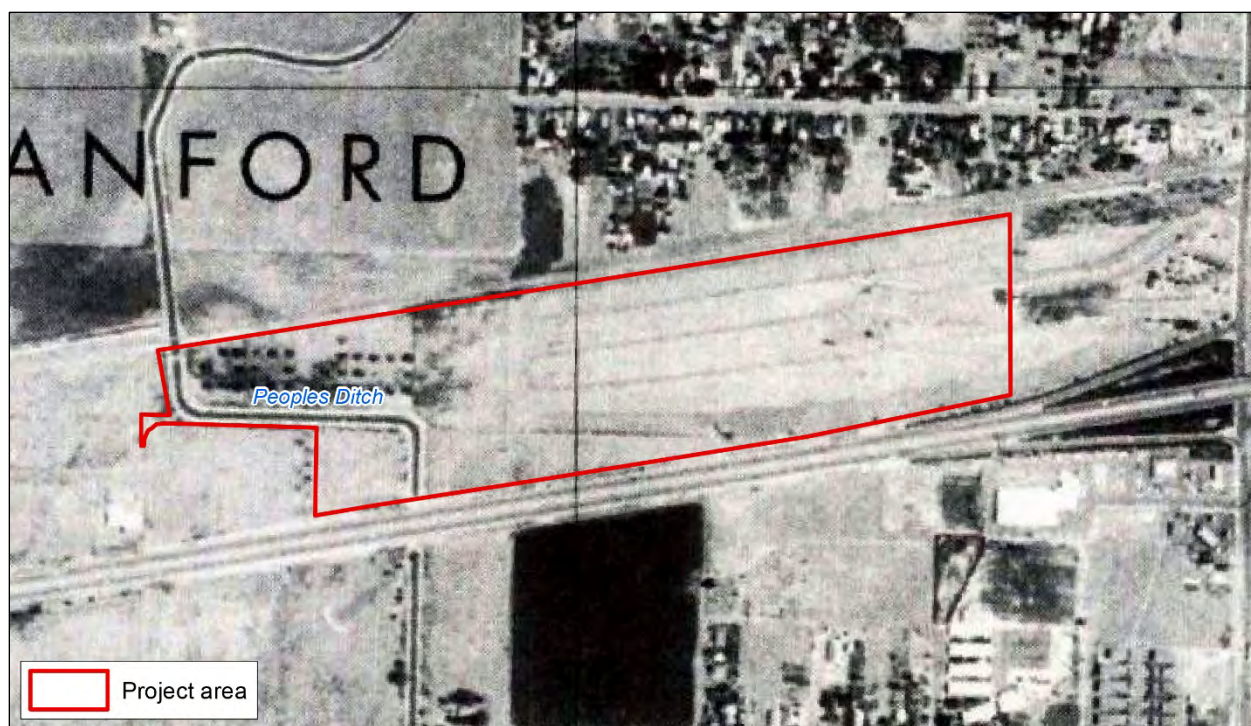


**Figure 2-5** 1937 aerial photo depicting the alignment of the Peoples Ditch, the history-era residence, and the Southern Pacific/San Joaquin Valley Railroad within the Project area.



**Figure 2-6** USGS Hanford, CA 1954 photorevised topographic map showing historical building in eastern portion of the Project area and Peoples Ditch in the western portion.





**Figure 2-7** 1976 aerial photograph demonstrating removal of historical building in the eastern portion of the Project area and the alignment of the Peoples Ditch at that time in the western portion.



## **3 METHODS**

### **3.1 RECORDS SEARCH**

On April 21, 2020, Æ requested a records search of the CHRIS from the SSJVIC at California State University, Bakersfield, to identify previously recorded resources and prior surveys within the Project area and surrounding 0.5-mile area. SSJVIC staff examined site records, files, and maps, and completed searches of the Historic Property Data File, National Register of Historic Places, California Register of Historical Resources, and California Historical Resources databases.

### **3.2 ARCHIVAL RESEARCH**

The purpose of archival research is to provide information regarding the history of land use and to assess the potential for prehistoric and historic-era archaeological deposits within the Project area. Æ's investigation compiled information from several sources, including:

- Map and Aerial Locator Tool (MALT) (<http://malt.library.fresnostate.edu/MALT/>);
- U.S. Geological Survey TopoView (<https://ngmdb.usgs.gov/topoview/>);
- GLO survey plats (<https://glorerecords.blm.gov/default.aspx>); and
- Æ's in-house library, which includes maps and local histories.

### **3.3 NATIVE AMERICAN OUTREACH**

On April 21, 2020, Æ requested that the Native American Heritage Commission (NAHC) conduct a search of its Sacred Lands File to identify previously recorded sacred sites or cultural resources of special importance to tribes and provide contact information for local Native American representatives who may have information about the Project area. The NAHC responded on April 22, 2020, with its findings and attached a list of Native American tribes and individuals culturally affiliated with the Project area. On August 5, 2020, Æ mailed an outreach letter to each of the contacts identified by the NAHC and kept a log of all responses (Appendix C). The outreach letter and follow-up calls are considered best practices within cultural resource management. Æ's outreach efforts thus do not qualify as CEQA Assembly Bill 52 government-to-government consultation, which would be the responsibility of the CEQA lead agency (City of Hanford).

### **3.4 BURIED SITE SENSITIVITY ASSESSMENT**

Æ conducted a geologic and hydrologic review of the Project area to assess the potential for paleosols that may contain intact prehistoric cultural deposits. Æ consulted geological maps, historical maps, the U.S. Department of Agriculture Natural Resources Conservation Service



Web Soil Survey online database, and regional geoarchaeological studies (e.g., Meyer et al. 2010). These sources provided information regarding the natural watercourses in the area as well as data about local soils and sediments, parent rock formations, and historical vegetation. This information was used to estimate the age of the sediments surrounding the study area, consider the hydrologic and geologic forces that created and placed these sediments, and assess the likelihood of encountering buried cultural resources within the vertical Project area during proposed construction activity as described in a preliminary geotechnical investigation report for the Project area (AhTye et al. 2020).

### **3.5     ARCHAEOLOGICAL SURVEY**

On May 23 and 24, 2020, Æ Staff Archaeologist Ward Stanley conducted an intensive archaeological pedestrian survey of the entire Project area. Stanley used parallel transects spaced 15–20 meters apart and took photographs of the area using an iPhone 11 camera. Methods and observations were recorded on Æ Daily Work Record and Survey Field Record forms. Stanley used a Trimble Global Positioning System (GPS) unit to collect geospatial data. All photographs and field notes are on file at Æ’s Fresno office.

#### **3.5.1     Documentation of Cultural Resources**

Æ recorded cultural resources by first establishing a site boundary that encompasses the distribution of artifacts across the ground surface and then examining potentially temporal diagnostic artifacts to establish the general age of the resource (e.g., prehistoric, historic, post-World War II, modern). A few artifacts were then collected from the ground surface and transported to the Æ laboratory in Fresno to confirm the age of the resource using Æ library resources and historic artifact guides. All collected artifacts were placed in archival bags labeled with provenience information, which included Project number, site number, Universal Transverse Mercator coordinates, date of collection, and surveyor’s initials. The resources were then recorded on California Department of Parks and Recreation Primary Record and Location Map forms.

## 4 FINDINGS

### 4.1 RECORDS SEARCH RESULTS

The SSJVIC responded to Æ's records search request on May 5, 2020 (Records Search File No. 20-168). The SSJVIC reported nine previous cultural studies encompassing portions of the Project area that occurred between 1982 and 2015, and five additional studies in the surrounding 0.5-mile area (see Appendix B). Of the nine studies within the Project area, seven had negative results. The Peoples Ditch (P-16-000246/CA-KIN-97H) is the only previously recorded resource within the Project area. The Southern Pacific Railroad/San Joaquin Valley Railroad (P-16-000122/CA-KIN-177H) is just outside the Project area's northern boundary. Two additional built environment resources, the Burlington North and Santa Fe Railway (P-16-000120) and a Craftsman bungalow (P-16-000205) are within a 0.5-mile radius of the Project area (Appendix B).

Æ's in-house cultural resource database revealed that one additional resource, the Kingsburg-Lemoore transmission line, is also within 0.5 miles of the Project area.

### 4.2 ARCHIVAL RESEARCH

The desktop research resulted in key historical information presented in Section 2.2.3. Specific sources of map and aerial images consulted during archival research are identified in Appendix B.

### 4.3 NATIVE AMERICAN OUTREACH

The NAHC responded to Æ's request on April 22, 2020, and stated that its search of the Sacred Lands File did not identify any known cultural resources that could have special importance to Native American groups within the Project area or surrounding 0.5-mile area. However, the NAHC cautioned that the absence of information in the Sacred Lands File does not indicate the absence of Native American cultural resources within the Project area (see Appendix C). The NAHC supplied a list of Native American representatives to be contacted for information regarding sacred or special sites of cultural and spiritual significance in the Project area and surrounding 0.5-mile area, including:

- Stan Alec of the Kings River Choinumni Farm Tribe;
- Chairperson Leo Sisco of the Santa Rosa Rancheria of Tachi Yokut Tribe;
- Cultural Resource Director Bob Pennell of the Table Mountain Rancheria;
- Chairperson Neil Peyron of the Tule River Indian Tribe;
- Chairperson Kenneth Woodrow of the Wuksache Indian Tribe/Eshom Valley Band;
- and

- Chairperson Leanne Walker-Grant of the Table Mountain Rancheria.

On August 5, 2020, Æ sent a letter describing the Project to each of the Native American representatives identified above. Follow-up contact by email and telephone was completed on August 13, 2020. No responses have been received to date.

#### **4.4 BURIED SITE SENSITIVITY ASSESSMENT**

This section assesses the potential for the proposed Project to impact intact buried archaeological deposits in the Project area and identifies the conditions that may affect preservation of cultural materials, should any exist. Estimating the general sensitivity of soils to contain buried archaeological material is based on various factors, including the Project area's distance from water, age of geological deposits, landform, river formation patterns, ground slope, and soil types within the Project area and their respective characteristics (Rapp and Hill 2006; Waters 1992). In general, the potential for buried prehistoric resources increases with proximity to natural watercourses.

Geologic and soil data derived from the National Resources Conservation Service Web Soil Survey identify only one soil type within the Project area, consisting of Nord coarse to fine sandy loam. In general, the Nord series has high to very high sensitivity for containing paleosols with intact cultural deposits. Nord sandy loam soil consists of mixed alluvium formed from decomposed granite and sedimentary rock. These soils are found on alluvial fan remnants and floodplains with a slope between 0 and 2 percent. The soil type likely spans the Early to Late Holocene. It is a very deep (i.e., extending 35 feet below the ground surface), well-drained soil with variable salinity and low clay content that supports native grasses, herbs, and white oak (*Quercus lobata*) (Soil Survey Staff 1999). A geotechnical investigation prepared for the Project area described the soil within 10 feet below the ground surface level as having the potential for hydrocompaction (liquefaction) when exposed to moisture (AhTye et al. 2020:18).

Alluvial fan landforms are typically environments with high potential to contain anthropogenic paleosols, particularly near streams where the effects of continuous high-velocity helical water flow are comparatively less than is observed commonly in larger rivers. However, subsurface conditions composed of well-drained highly saline soils tend to only moderately preserve bone, teeth, and other organic materials (Schiffer 1987). Saline introduced into cultural deposits via groundwater percolation, which is common in agricultural areas, may contribute to an accelerated rate of decay of certain artifact classes. Metals and other porous materials would be most susceptible to corrosion resulting from saline-rich groundwater percolation, particularly with increasing acidic conditions (Kibblewhite et al. 2015; Rapp and Hill 2006). Yet, improved preservation of cultural deposits is expected below the hardpan, as the decomposing effects of excessive water percolation are slowed (Kibblewhite et al. 2015). Thus, the possibility of encountering moderately or well-preserved cultural deposits within the vertical Project area increases with depth. Therefore, the potential for encountering a well-preserved anthropogenic paleosol would be greatest where the hardpan would be encompassed by the vertical Project area. However, moderately preserved and intact cultural deposits could be encountered in any paleosol above the hardpan. An important concept to understand is that even poor to moderately preserved cultural remains may be eligible for listing in the California Register of Historical Resources or National Register of Historic Places.

In conclusion, the entire Project area is encompassed by a soil type and landform that have high or very high potential for containing anthropogenic paleosols with intact cultural deposits. Adding to this sensitivity is the presence of Dry Creek within the Project area during prehistory, which would have provided rich habitat and other resources for Native American groups. Dry Creek was a naturally occurring intermittent stream that was modified during Hanford's early settlement period (see Figure 2-2). However, as can be seen in historical GLO plats, atlases, and aerial images, it is likely that portions of the Project area have been disturbed by past infill of Dry Creek and the construction of Peoples Ditch in addition to impacts related to historic-era agricultural and domestic activities in the eastern portion of the Project area. In these areas of disturbance, the sensitivity for intact and well-preserved buried sites is moderate, low, or none.

This evidence of modern disturbance notwithstanding, due to the very high sensitivity of the soil type in the Project area, and because overexcavation and recompaction of soil is recommended to mitigate the effects of potential hydrocompaction "to at least 7 feet below the existing grade and to a distance of at least 10 feet beyond the perimeter of the planned buildings and surrounding improvements" (AhTye et al. 2020:21), limited subsurface archaeological testing to confirm the presence/absence of anthropogenic paleosols or intact cultural resource deposits is recommended. Based on the findings of subsurface archaeological testing, archaeological data recovery to assess prehistoric cultural deposits and cultural resource monitoring during ground disturbing construction activities may be needed.

## **4.5 ARCHAEOLOGICAL SURVEY FINDINGS**

### **4.5.1 Visibility**

The Project area is primarily utilized for agricultural purposes. As a result, the landscape is relatively flat and unobscured by pavement or buildings. At the time of survey, the ground surface within the Project area afforded 90–100 percent visibility (Figure 4-1). Isolated patches of dead grass obscured ground visibility in some areas. Moderate amounts of modern trash were encountered throughout the Project area. The inner bank of the modern alignment of Peoples Canal was obscured by dense vegetation and had no ground visibility. The canal bottom had excellent visibility (90–100 percent; Figure 4-2). A small portion of the Project area in the southwest corner was enclosed by a chain-link fence and was not accessible for survey (Figure 4-3).

### **4.5.2 Archaeological Resources**

Æ archaeologists surveyed all accessible portions of the Project area, totaling 42.82 acres of intensive coverage, or approximately 99 percent of the total Project area (Figure 4-3). The southeastern corner of the Project area was inaccessible behind a secured fence and could not be surveyed. The portion not surveyed comprised less than 1 acre and was less than 1 percent of the Project area.

Field staff observed one historic-era refuse scatter (AE-4167-01) and one historic-era isolate (AE-4167-ISO-01). AE-4167-01 is a large historical refuse scatter extending across 6 acres in the northeast section of the Project area. Cultural constituents include glass of various colors, broken bottles, ceramic fragments, insulators, wood fragments, bricks, river cobbles with cement mortar attached, heavy metal pipe fragments, miscellaneous metal fragments, a toy marble, and a bottle

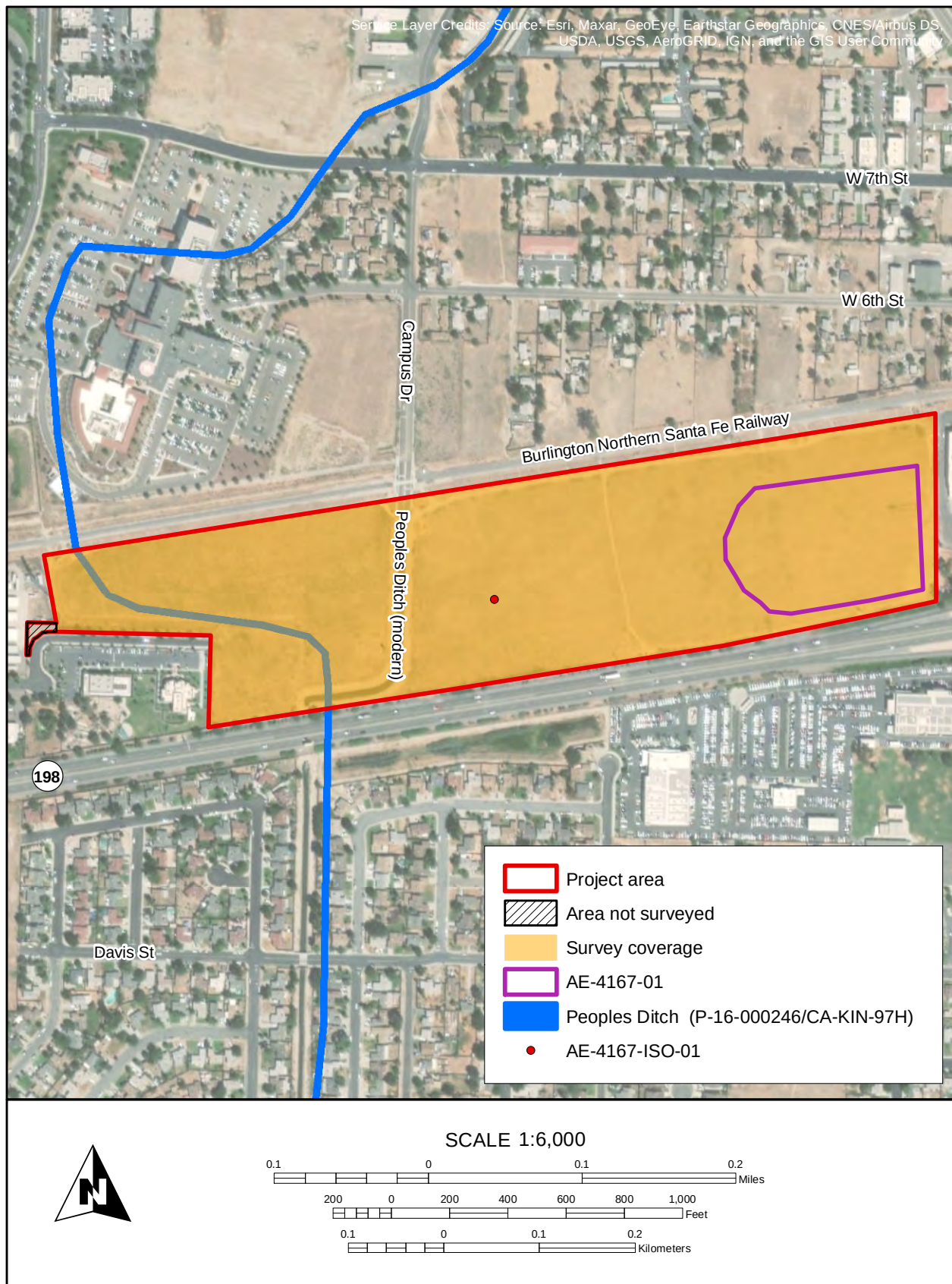


**Figure 4-1** Survey conditions from the center of the Project area showing 100 percent ground surface visibility, facing west.



**Figure 4-2** Survey conditions within and along the modern alignment of Peoples Ditch, facing north.

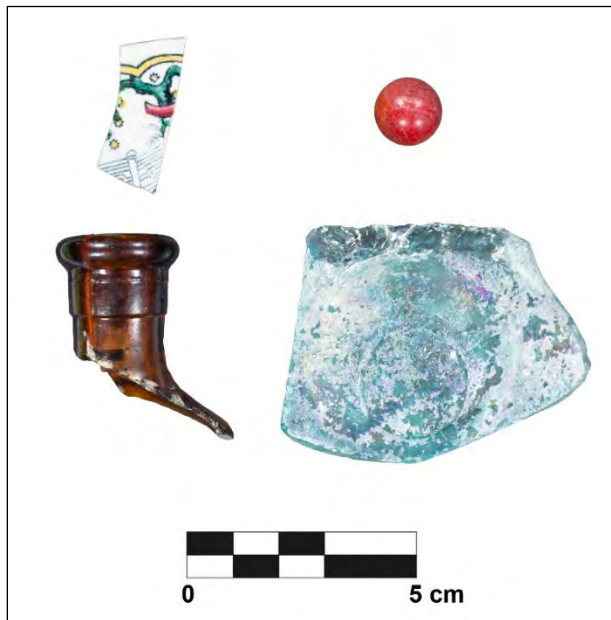




**Figure 4-3 Survey coverage and cultural resources in the Project area.**

base fragment showing pressure flaking along one edge. A total of 12 temporally diagnostic artifacts were identified; a sample of these are presented in Figure 4-4. The artifacts date to the first half of the twentieth century, suggesting the deposit may be associated with the nonextant historical structure visible on historic-era GLO plats, historical atlas maps, and aerial images. The site appears to have been impacted by previous agricultural activity that would have displaced artifacts within a few feet of their original placement. The condition of the subsurface deposit is unknown as it was not visible during the pedestrian survey.

AE-4167-ISO-01 is an aqua blue glass insulator fragment that was observed approximately 800 feet west of AE-4167-01 (Figure 4-5).



**Figure 4-4** Various glass and ceramic artifact fragments and a toy marble from historic site AE-4167-01.



**Figure 4-5** Detail view of historical glass insulator fragment (isolated artifact AE-4167-ISO-01).

No prehistoric artifact concentrations, isolated artifacts, features, or evidence of human skeletal material were observed during the survey.

#### **4.5.3 Built Environment Resources**

A modern segment of Peoples Ditch (P-16-000246/CA-KIN-97H) and the remnants of its older, now abandoned, route were observed during survey (Figure 4-6). Æ updated the site record to reflect the current condition of the historic-era remnant portion (Appendix D).

The Peoples Ditch was constructed in the 1870s by the Peoples Ditch Company to divert water from the Kings River to agricultural operations in the southern San Joaquin Valley and is still in use today (Jones 2017). According to Google Earth imagery, the historical segment of Peoples Ditch that intersects the Project area was abandoned sometime between 1994 and 2003, along with a segment north of the railroad, west of Campus Drive. At that time, Peoples Ditch was realigned and piped under Campus Drive and the railroad tracks for approximately 1,660 feet. It





**Figure 4-6** Remnant scar of historical Peoples Ditch within survey area, facing east.

resurfaces in the Project area just south of the railroad track and continues to flow south in a J-shaped configuration between the railroad and State Route 198, east of its original alignment, before returning to its historical alignment at State Route 198 (see Figure 4-3). This new segment is less than 50 years old. The only remaining evidence of the original alignment of the ditch is its scar on the landscape and the remains of a concrete containment well at the northern end of the abandoned segment.



## 5 SUMMARY AND RECOMMENDATIONS

Æ provided cultural resource services for the Hanford Place Medical and Mixed-Use Property Project in Kings County, California. The Hanford Group proposes to build 15 structures that would be utilized for medical outpatient clinic services, hospitality, specialized education, retail, medical offices, skilled nursing and assisted living facilities, and multifamily housing. Ground disturbance resulting from proposed Project activities would include grading; trenching for installation of water, sewer, and electrical infrastructure; construction of a roundabout and buildings, structures, and facilities; and excavation of a storm water retention basin. Thus, the proposed Project requires compliance with CEQA.

Under contract to Epic Management Group, Inc., Æ conducted a cultural resource inventory of the Project area to determine if historical resources are present within the Project area. Accordingly, Æ performed background research, obtained a records search from the SSJVIC of the CHRIS, requested a search of the NAHC Sacred Lands File, contacted local Native American representatives identified by the NAHC for outreach purposes, assessed the sensitivity of the Project area for containing paleosols that have potential to contain buried archaeological deposits, and conducted an intensive pedestrian survey of the Project area.

The SSJVIC reported that nine previous cultural resource studies encompassing portions of the Project area occurred from 1981 to 2015, and five additional studies were completed in the surrounding 0.5-mile. The Peoples Ditch (P-16-000246/CA-KIN-97H) is the only previously recorded resource within the Project area. Four additional built environment resources were reported within a 0.5-mile of the Project area (Appendix B). The NAHC's Sacred Lands File search did not identify sacred places within the Project area, and Æ did not receive comments from Native American representatives identified by the NAHC. The buried site sensitivity assessment of the vertical Project area revealed high sensitivity for the presence of anthropogenic paleosols containing buried sites in areas of the Project that have not been disturbed previously by historic-era construction of the People's Ditch or its modern realignment, or by agricultural activities occurring at depths less than 24 inches below the ground surface. Æ's pedestrian survey of the Project area resulted in the identification of one historic-era refuse scatter (AE-4167-01), one historical isolated artifact (AE-4167-ISO-01). Æ additionally updated the existing California Department of Parks and Recreation cultural resource record for the Peoples Ditch to record its remnant historical alignment within the Project area.

To fully comply with CEQA and determine if the Project would cause a substantial adverse change in the significant qualities of a historical resource, Æ recommends additional mapping and subsurface testing of AE-4167-01 to evaluate its eligibility for inclusion in the California Register of Historical Resources, pursuant to California PRC 5024.1. Additional focused subsurface testing in areas not previously disturbed by historic-era activities is recommended to confirm presence/absence of high-sensitivity paleosols that may include intact prehistoric cultural deposits. If intact prehistoric cultural deposits are encountered during subsurface presence/absence testing, Æ recommends further investigation to determine if the deposit retains

integrity and is eligible for inclusion in the California Register of Historical Resources. The methods and findings of the additional studies would be presented as an addendum to this report and would include cultural resource management recommendations to guide mitigation of potential adverse effects to any identified historical resources within the Project area.

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## **APPENDIX A**

### **Personnel Qualifications**



### Areas of Expertise

- Cultural resource management
- Ethnography
- Tribal consultation
- Zooarchaeological, paleoethnobotanical, and lithics analysis

### Years of Experience

- 20

### Education

Ph.D. candidate, Anthropology/  
Feminist Studies, University of  
California, Santa Barbara

M.A., Anthropology (Archaeology/  
Cultural Resource Management  
emphasis), University of California,  
Santa Barbara, 2010

B.A., Anthropology, University of  
California, Santa Barbara, 2002

A.A., Liberal Arts and Sciences,  
Ventura College, 1999

### Registrations/Certifications

- Registered Professional  
Archaeologist 39362477

### Permits/Licensure

- Principal Investigator, California  
BLM Statewide Cultural  
Resources Use Permit CA-18-22

### Professional Affiliations

- American Anthropological  
Association
- American Cultural Resources  
Association
- Santa Barbara Museum of Natural  
History
- Society for American Archaeology
- Society for California Archaeology
- World Archaeological Congress

### Professional Experience

- |           |                                                                                                        |
|-----------|--------------------------------------------------------------------------------------------------------|
| 2018–     | Senior Archaeologist, Applied EarthWorks, Inc., Fresno, California                                     |
| 2015–2018 | Interim Cultural Resources Supervisor and Senior Archaeologist/Ethnographer, Aspen Environmental Group |
| 2007–2009 | Archaeologist (GS-9), U.S. Department of Agriculture, Los Padres National Forest                       |
| 2005–2007 | Archaeologist (GS-7), U.S. Department of Agriculture, Los Padres National Forest                       |
| 2004–2005 | Archaeological Contractor, Padre, Inc., Ventura, California                                            |
| 2000–2005 | Archaeologist (GS-4/5), U.S. Department of Agriculture, Los Padres National Forest                     |

### Technical Qualifications

Ms. Dyste has 20 years of experience in cultural resources management and meets the Secretary of the Interior's qualification criteria as an archaeologist. She has extensive experience preparing environmental documents and managing complex projects pursuant to applicable federal, state, and local regulations. Her work includes senior review or prime authorship of cultural resources documents for National Historical Preservation Act Section 106, National Environmental Policy Act, and California Environmental Quality Act compliance, including public and tribal comment and response; development of research designs; design and implementation of cultural resources plans. Ms. Dyste is qualified to conduct archaeological survey, including the supervision of small to large sized field crews, as well as zooarchaeological, paleoethnobotanical, lithics, and ethnographic analyses. She is able to analyze cultural spatial patterns via use of Total Station and Geographic Information Systems software. Ms. Dyste's Assembly Bill 52 and NHPA Section 106 tribal consultation services are informed by her knowledge and training in Native American jurisprudence, cultural sensitivity training, and graduate seminars in Native American environmental law, indigenous research methodologies, and community-based Participatory Action Research with tribal and special interest groups. She has project experience in coastal, highlands, grasslands, desert, and remote mountain settings across the state of California, although her academic region of specialty is in central and southern California with a focus on Salinan, Esselan, northern/interior/coastal Chumash prehistoric and modern political tribal groups. Ms. Dyste is a native Spanish speaker and assists clients with the translation of English to Spanish signage and public notices.

## Areas of Expertise

- Geographic Information Systems (GIS) in archaeology
- Computer-generated maps and graphics
- Archaeological survey and excavation

## Years of Experience

- 7

## Education

B.A., Anthropology, California State University, Sacramento, 2013

Archaeological Technician Certificate, Anthropology Department, Fresno City College, Fresno, California, 2011

## Affiliations

Society for California Archaeology

## Professional Experience

- |           |                                                                                                            |
|-----------|------------------------------------------------------------------------------------------------------------|
| 2020–     | Staff Archaeologist/Project Manager, Applied EarthWorks, Inc. Fresno, California                           |
| 2017–     | Staff Archaeologist/GIS Specialist, Applied EarthWorks, Inc. Fresno, California                            |
| 2015–2017 | Geographic Information Systems (GIS) Technician, Applied EarthWorks, Inc., Fresno, California              |
| 2012–2013 | Laboratory Technician (volunteer), Archaeological Research Center, California State University, Sacramento |
| 2009–2010 | Laboratory Technician (volunteer), Fresno City College, Fresno, California                                 |

## Technical Qualifications

As a Staff Archaeologist, Ms. Jones performs Native American outreach, archival research, pedestrian archaeological and built environment survey, site recordation and evaluation, and partakes in archaeological excavation for projects throughout the Central Valley and Sierra Nevada foothills. She serves as a primary author or contributor for cultural resource inventory reports and is experienced in the preparation of California Department of Parks and Recreation (DPR) cultural resource record forms (523 series) and California Department of Transportation cultural resource documents. Ms. Jones has managed several water infrastructure improvement projects in the Central Valley and has working knowledge of Section 106 of the National Historic Preservation Act and California Environmental Quality Act regulatory frameworks. Her expertise also includes work as a Geographic Information Systems (GIS) technical specialist. She has extensive experience as a cartographer and spatial data manager for large and small projects involving both prehistoric and historic-era built environment cultural resources, particularly linear resources such as historic-era canal systems and related pumps, basins, and other components. Ms. Jones is a critical component of Æ's digital technology program, responsible for instructing cultural and paleontological staff in the use of ESRI ArcGIS software. Her background also includes extensive experience volunteering in archaeological repositories where she gained expertise in laboratory processing, cataloging, and management of archaeological collections.

## Areas of Expertise

- California archaeology—Sierra Nevada
- Survey, excavation, and Geographic Information System applications
- Project administration support

## Years of Experience

- 10

## Education

B.A., Kansas State University, 2008

## Permits/Licensure

- Field Director, California BLM Statewide Cultural Resources Use Permit CA-18-22

## Registrations/Certifications

Wildland Firefighter Qualified (Arduous)

## Professional Experience

- |           |                                                                                                    |
|-----------|----------------------------------------------------------------------------------------------------|
| 2015–     | Staff Archaeologist, Applied EarthWorks, Inc., Fresno, California                                  |
| 2011–2017 | Archaeological Field Technician/Crew Supervisor, Sierra National Forest and Lassen National Forest |
| 2009–2011 | Archaeological Field Technician/Crew Supervisor, Malheur National Forest                           |
| 2008–2009 | Archaeological Field Technician, Plumas National Forest                                            |

## Technical Qualifications

Mr. Stanley's archaeological experience includes survey, archaeological testing, data recovery excavation, and documentation of both prehistoric and historical resources in the Central Valley and Sierra National Forest in California. He has supervised field crews for several large-scale projects for the Sierra, Lassen, and Malheur National Forests. This work included prefield research, pedestrian survey, site recording, and report preparation. Mr. Stanley is knowledgeable about Section 106 of the National Historic Preservation Act and associated regulations and processes; he also has experience working with local Native American tribes. He is well versed in the use of Geographic Information System (GIS) applications, including those for data gathering and modeling, and has prepared maps using ESRI ArcGIS software for use in technical reports and in the field. In addition to working for the Sierra National Forest, he has served as lead archaeological resource advisor on three separate wildland fires and was responsible for coordinating protection of archaeological resources from suppression efforts. Additionally, he produced assessment damage reports for all fires. For Applied EarthWorks, Mr. Stanley has served as field supervisor for implementation of the Crane Valley Hydroelectric Power Project Historic Properties Management Plan, which includes monitoring of impacts to resources and implementing management measures to avoid or minimize adverse effects to historic properties within the Crane Valley Archaeological District.

## Areas of Expertise

- Cultural Resource Management
- Architectural History
- Historic Preservation

## Years of Experience

- 8

## Education

Ph.D. candidate, Architectural History, Utrecht University, 2013–present

M.A., Architectural History and Historic Preservation, Utrecht University, 2010–2011

B.A., Art History, Utrecht University, 2007–2010

## Professional Experience

|           |                                                                                       |
|-----------|---------------------------------------------------------------------------------------|
| 2019–     | Senior Architectural Historian, Applied EarthWorks, Inc., Fresno, California          |
| 2017–2019 | Editor/Translator, SDI Media, Los Angeles, California                                 |
| 2016–2017 | Subcontractor, GPA Consulting, Los Angeles, California                                |
| 2015–2016 | Project Manager, City of Amsterdam, The Netherlands                                   |
| 2014–2015 | Visiting Scholar, Columbia University, New York                                       |
| 2011–2014 | Advisor on Cultural History and Urban Development, City of Amsterdam, The Netherlands |
| 2010–2011 | Intern, Amsterdam Centre for Architecture, The Netherlands                            |

## Technical Qualifications

Mr. van Onna has been involved in cultural resources management since 2011. His areas of expertise include built environment investigations, preparation of historic resource evaluation reports, and other required documentation for cultural resource management projects. As a Senior Architectural Historian for Applied EarthWorks, Mr. van Onna meets the Secretary of the Interior's professional qualification standards in architectural history. He has prepared technical reports for historical built environment resources to satisfy compliance requirements under the National Historic Preservation Act (NHPA) Section 106 and the California Environmental Quality Act (CEQA), including significance evaluations and eligibility recommendations for inclusion in the National Register of Historic Places (NRHP) and California Register of Historical Resources (CRHR). Mr. van Onna has previously worked for the City of Amsterdam, The Netherlands, coordinating its Municipal Landmarks Project and completing numerous built environment surveys, studies, and historical significance assessments for environmental impact reports, zoning plans, and other policy documents. At Applied EarthWorks, he provides guidance and assistance to project managers and staff alongside his core tasks as an architectural historian. Additional skills include archival research, architectural photography, editing, and quality assurance. Through his pursuit of a doctoral degree at Utrecht University, he explores the role of historic preservation in urban public spaces in the United States.



## **APPENDIX B**

### **Records Search Results**

\*Archaeological site location information is exempt from the Freedom of Information Act (FOIA) and California Public Records Act (CPRA).





5/5/2020

Diana Dyste  
Applied Earthworks, Inc.  
1391 W. Shaw Ave., Suite C  
Fresno, CA 93711

Re: Hanford Place Medical and Mixed-Use Property Project in the City of Hanford  
Records Search File No.: 20-168

The Southern San Joaquin Valley Information Center received your record search request for the project area referenced above, located on the Hanford USGS 7.5' quad. The following reflects the results of the records search for the project area and the 0.5 mile radius:

As indicated on the data request form, the locations of resources and reports are provided in the following format: ☐ custom GIS maps ☒ shapefiles

|                                   |                                                                  |
|-----------------------------------|------------------------------------------------------------------|
| Resources within project area:    | P-16-000122, 000246                                              |
| Resources within 0.5 mile radius: | P-16-000120, 000205                                              |
| Reports within project area:      | KI-00028, 00042, 00093, 00100, 00109, 00111, 00238, 00268, 00269 |
| Reports within 0.5 mile radius:   | KI-00079, 00094, 00110, 00192, 00310                             |

**Resource Database Printout (list):** ☒ enclosed ☐ not requested ☐ nothing listed

**Resource Database Printout (details):** ☒ enclosed ☐ not requested ☐ nothing listed

**Resource Digital Database Records:** ☒ enclosed ☐ not requested ☐ nothing listed

**Report Database Printout (list):** ☒ enclosed ☐ not requested ☐ nothing listed

**Report Database Printout (details):** ☒ enclosed ☐ not requested ☐ nothing listed

**Report Digital Database Records:** ☒ enclosed ☐ not requested ☐ nothing listed

**Resource Record Copies:** ☒ enclosed ☐ not requested ☐ nothing listed

**Report Copies:** ☒ enclosed ☐ not requested ☐ nothing listed

*Note: PDFs for "Other" Reports were omitted, per the Data Request Form*

**OHP Built Environment Resources Directory:** ☒ enclosed ☐ not requested ☐ nothing listed

**Archaeological Determinations of Eligibility:** ☐ enclosed ☐ not requested ☒ nothing listed

**CA Inventory of Historic Resources (1976):** ☐ enclosed ☐ not requested ☒ nothing listed

**Caltrans Bridge Survey:** Not available at SSJVIC; please see  
<http://www.dot.ca.gov/hq/structur/strmaint/historic.htm>

**Ethnographic Information:** Not available at SSJVIC

**Historical Literature:** Not available at SSJVIC

**Historical Maps:** Not available at SSJVIC; please see  
<http://historicalmaps.arcgis.com/usgs/>

**Local Inventories:** Not available at SSJVIC

**GLO and/or Rancho Plat Maps:** Not available at SSJVIC; please see  
<http://www.glorerecords.blm.gov/search/default.aspx#searchTabIndex=0&searchByTypeIndex=1> and/or  
<http://www.oac.cdlib.org/view?docId=hb8489p15p;developer=local;style=oac4;doc.view=items>

**Shipwreck Inventory:** Not available at SSJVIC; please see  
<http://www.slc.ca.gov/Info/Shipwrecks.html>

**Soil Survey Maps:** Not available at SSJVIC; please see  
<http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Invoices for Information Center services will be sent under separate cover from the California State University, Bakersfield Accounting Office.

Thank you for using the California Historical Resources Information System (CHRIS).

Sincerely,

**Celeste M. Thomson** Digitally signed by Celeste M. Thomson  
Date: 2020.05.05 12:34:07 -07'00'

Celeste M. Thomson  
Coordinator

## Resource List

SSJVIC Record Search 20-168

| Primary No. | Trinomial      | Other IDs                                                                                                                               | Type            | Age      | Attribute codes | Recorded by                                                                                                                                                                      | Reports                      |
|-------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| P-16-000120 |                | Resource Name - Burlington Northern and Santa Fe Railway (formerly Atchison, Topeka, and Santa Fe);<br>Resource Name - CRM TECH 607-7H  | Structure       | Historic | AH07            | 2001 (Bai "Tom" Tang, Daniel Ballester, CRM Tech)                                                                                                                                |                              |
| P-16-000122 | CA-KIN-000117H | Resource Name - San Joaquin Valley Railroad, Southern Pacific Railroad                                                                  | Structure, Site | Historic | AH07; HP37      | 2001 (Bai "Tom" Tang, CRM Tech);<br>2013 (A. Gardner, L. Bennett, S. Lewis, Far Western Anthropological Research Group, Inc.);<br>2017 (Jessica Jones, Applied EarthWorks, Inc.) | KI-00109, KI-00245, KI-00310 |
| P-16-000205 |                | Resource Name - 10130 Seventh Avenue, Hanford Vicinity, Kings County;<br>OHP Property Number - 127866;<br>OTIS Resource Number - 570326 | Building        | Historic | HP02            | 1999 (Douglas W. Dodd, Caltrans District 6)                                                                                                                                      |                              |
| P-16-000246 | CA-KIN-000097H | Resource Name - JKI-002;<br>Resource Name - People's Ditch;<br>OTIS Resource Number - 666092                                            | Structure       | Historic | HP20            | 2001 (Bai "Tom" Tang, Daniel Ballester, CRM TECH);<br>2009 (Joseph Freeman, Jarma Jones, JRP Historical Consulting, LLC);<br>2017 (Jessica Jones, Applied EarthWorks, Inc.)      | KI-00196, KI-00310           |

## Report List

### SSJVIC Record Search 20-168

| Report No. | Other IDs                                                                                         | Year | Author(s)                                                                   | Title                                                                                                                                                                                   | Affiliation                                                       | Resources                                                                              |
|------------|---------------------------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| KI-00028   | NADB-R - 1140863                                                                                  | 1995 | Hatoff, Brian, Voss, Barb, Waechter, Sharon, Benté, Vance, and Wee, Stephen | Cultural Resources Inventory Report for the Proposed Mojave Northward Expansion Project                                                                                                 | Woodward-Clyde Consultants                                        | 16-000067, 16-000068                                                                   |
| KI-00042   |                                                                                                   | 1981 | O'Connor, Denise and Clayton, A.B.                                          | Archaeological Survey Report for an Interchange at 12th Avenue on Route 198, Kings County 06-KIN-198, R16.4/R17.4 06100-178200                                                          | Caltrans                                                          |                                                                                        |
| KI-00079   |                                                                                                   | 1998 | Price, Barry A.                                                             | Cultural Resources Assessment for Pacific Bell Mobile Services Facility CV-503-01                                                                                                       | Applied EarthWorks Inc.                                           |                                                                                        |
| KI-00093   |                                                                                                   | 2000 | Ryan, Christopher                                                           | Supplemental Archaeological Survey for te Laguna Irrigation District Transmission Line Improvement Project, Fresno and Kings Counties, California                                       | Applied EarthWorks Inc.                                           |                                                                                        |
| KI-00094   | Submitter - Project Number 27101                                                                  | 2000 | Nelson, Wendy J.                                                            | Cultural Resources Survey for the Level (3) Communications Long Haul Fiber Optics Project Segment WS04: Sacramento to Bakersfield                                                       | Far Western Anthropological Research Group, Inc.                  | 16-000084                                                                              |
| KI-00100   |                                                                                                   | 2000 | Pastron, Allen G. and Brown, Keith R.                                       | Historical and Cultural Resource Assessment Update Existing Telecommunications Facility Site No. CV-503-01 Glendale Ave Kings County, California                                        | Brown and Mills, Inc. Geotechnical and Environmental Consultants. |                                                                                        |
| KI-00109   | Submitter - Contract #675                                                                         | 2002 | Love, Bruce and Tang, Bai "Tom"                                             | Historic Property Survey Report: Cross Valley Rail Corridor Project Between the Cities of Visalia and Huron Tulare, Kings, and Fresno Counties, California                              | CRM TECH                                                          | 16-000067, 16-000068, 16-000086, 16-000122, 16-000123, 16-000124, 16-000127, 16-000128 |
| KI-00110   | Submitter - Contact #675                                                                          | 2002 | Love, Bruce and Tang, Bai "Tom"                                             | Archaeological Survey Report: Cross Valley Rail Corridor Project Between the Cities of Visalia and Huron Tulare, Kings, and Fresno Counties, California                                 | CRM TECH                                                          |                                                                                        |
| KI-00111   | Submitter - Contract #675                                                                         | 2002 | Love, Bruce and Tang, Bai "Tom"                                             | Historic Study Report/Historical Resources Evaluation Report: Cross Valley Rail Corridor Project Between the Cities of Visalia and Huron Tulare, Kings, and Fresno Counties, California | CRM TECH                                                          |                                                                                        |
| KI-00192   | Caltrans - 06-Kin-198, PM R16.9 (KP R27.2) EA 06-48750; Submitter - Contract No. 06A0852, Task 22 | 2007 | Lanner, David and Wohlgemuth, Eric                                          | Archaeological Survey Report for the 12th Avenue Interchange on State Route 198, Hanford, Kings County, California                                                                      | Far Western Anthropological Research Group, Inc.                  |                                                                                        |

## Report List

SSJVIC Record Search 20-168

| Report No. | Other IDs           | Year | Author(s)                                               | Title                                                                                                                                                                                                    | Affiliation                                      | Resources                                             |
|------------|---------------------|------|---------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|-------------------------------------------------------|
| KI-00238   |                     | 2010 | Meyer, Jack, Young, D. Craig, and Rosenthal, Jeffrey    | Volume I: A Geoarchaeological Overview and Assessment of Caltrans Districts 6 and 9 - Cultural Resources Inventory of Caltrans District 6/9 Rural Conventional Highways - EA 06-0A7408 TEA Grant         | Far Western Anthropological Research Group, Inc. |                                                       |
| KI-00238A  |                     | 2010 | Meyer, Jack, Young, D. Craig, and Rosenthal, Jeffrey S. | Volume II: Appendices A Georchaological Overview and Assessment of Caltrans District 6 and 9 - Cultural Resources Inventory of Caltrans District 6/9 Rural Conventional Highways - EA06-0A7408 TEA Grant | Far Western Anthropological Research Group, Inc. |                                                       |
| KI-00268   |                     | 2011 | Greenwald, Alexandra                                    | Archaeological Survey Report for the California High Speed Train - Fresno to Bakersfield Section                                                                                                         | URS Corporation                                  |                                                       |
| KI-00269   |                     | 2015 | Schiffman, Robert A.                                    | Archaeological Evaluation of Areas Selected for Possible Nuclear Power Plants by the LADWP                                                                                                               | Bakersfield College                              |                                                       |
| KI-00310   | Other - PM 74000707 | 2017 | Jones, Jessica                                          | Cultural Resources Contstraints Report Kingsburg-Lemoore Recondutor, Kings County, California                                                                                                            | Applied EarthWorks, Inc.                         | 16-000122, 16-000128, 16-000129, 16-000246, 16-000447 |



## Historical Topographic Maps and Aerial Images Consulted

| Date | Name                                          | Author                                 | Reference                                                                                                                                                                                                                                                                                                                                                          | Notes                                                                                                                                                                        |
|------|-----------------------------------------------|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1934 | State Division of Highways                    | C-3094_z-104                           | 1934 State Division of Highways. Flown by Fairchild Aerial Surveys. Aerial Survey No. C-3094_z-104, <a href="http://mil.library.ucsb.edu/ap_indexes/FrameFinder/">http://mil.library.ucsb.edu/ap_indexes/FrameFinder/</a> , accessed April 29, 2020.                                                                                                               | Historic residence is in the field in the project area. Southern Pacific Railroad visible. City is primarily agricultural/industrial.                                        |
| 1937 | Fresno County Aerial Survey 1937 13-ABJ 67-78 | Agricultural Adjustment Administration | 1937 Fresno County, California, Aerial Survey 1937 13-ABJ 67-78, <a href="http://cdmweb.lib.csufresno.edu/cdm/singleitem/collection/aerial/id/1178">http://cdmweb.lib.csufresno.edu/cdm/singleitem/collection/aerial/id/1178</a> , accessed through Map and Aerial Locator Tool (MALT), Henry Madden Library, California State University, Fresno, April 28, 2020. | Historic residence is in the field in the project area. Southern Pacific Railroad visible. City is primarily agricultural/industrial.                                        |
| 1942 | Fresno County Aerial Survey 1942 ABJ 8B-157   | Agricultural Adjustment Administration | 1937 Fresno County, California, Aerial Survey 1942 ABJ 8B-157, <a href="http://cdmweb.lib.csufresno.edu/cdm/singleitem/collection/aerial/id/1178">http://cdmweb.lib.csufresno.edu/cdm/singleitem/collection/aerial/id/1178</a> , accessed through Map and Aerial Locator Tool (MALT), Henry Madden Library, California State University, Fresno, April 28, 2020.   | Historic residence is still shown in the project area. Southern Pacific Railroad visible. City is primarily agricultural/industrial. No other updates to historic landscape. |
| 1926 | Hanford, CA 1:31,680                          | U.S. Geological Survey                 | 1926 Hanford, <i>Calif.</i> , 1:31,680 scale. U.S. National Geologic Map Database, Historical Topographic Map Collection (topo View), <a href="https://ngmdb.usgs.gov/topoview/">https://ngmdb.usgs.gov/topoview/</a> , accessed April 27, 2020.                                                                                                                   | The Peoples Ditch is shown on the westside of the project area. The project area is shown to have been used for agriculture.                                                 |
| 1954 | Hanford, CA 1:24:000                          | U.S. Geological Survey                 | 1954 Hanford, <i>Calif.</i> , 1:24,000 scale. U.S. National Geologic Map Database, Historical Topographic Map Collection (topoView), <a href="https://ngmdb.usgs.gov/topoview/">https://ngmdb.usgs.gov/topoview/</a> , accessed April 27, 2020.                                                                                                                    | The Peoples Ditch is shown on the westside of the project area. The project area is shown to have been used for agriculture. No buildings are shown in the project area.     |
| 1891 | Township 18 South, Range 21 East              | General Land Office                    | 1891 General Land Office Survey Plat, Township 18 South, Range 21 East, Mount Diablo, DM ID 380157. U.S. Department of the Interior, Bureau of Land Management General Land Office Records, <a href="https://glorerecords.blm.gov">https://glorerecords.blm.gov</a> , accessed April 27, 2020.                                                                     | No roads or other built environment shown.                                                                                                                                   |
| 1867 | Township 18 South, Range 21 East              | General Land Office                    | 1867 General Land Office Survey Plat, Township 18 South, Range 21 East, Mount Diablo, DM ID 380161. U.S. Department of the Interior, Bureau of Land Management General Land Office Records, <a href="https://glorerecords.blm.gov">https://glorerecords.blm.gov</a> , accessed April 27, 2020.                                                                     | No roads or other built environment shown.                                                                                                                                   |
| 1989 | Township 18 South, Range 21 East              | General Land Office                    | 1989 General Land Office Survey Plat, Township 18 South, Range 21 East, Mount Diablo, DM ID 380163. U.S. Department of the Interior, Bureau of Land Management General Land Office Records, <a href="https://glorerecords.blm.gov">https://glorerecords.blm.gov</a> , accessed April 27, 2020.                                                                     | No roads or other built environment shown.                                                                                                                                   |

## **APPENDIX C**

### **Native American Outreach**

\*Archaeological site location information is exempt from the Freedom of Information Act (FOIA) and California Public Records Act (CPRA).



## NATIVE AMERICAN HERITAGE COMMISSION

April 22, 2020

Diane Dyste

Applied EarthWorks, Inc.

Via Email to: DDyste@appliedearthworks.com

### Re: Hanford Place Medical and Mixed-Use Property Project, Kings County

Dear Ms. Dyste:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: [Nancy.Gonzalez-Lopez@nahc.ca.gov](mailto:Nancy.Gonzalez-Lopez@nahc.ca.gov).

Sincerely,



Nancy Gonzalez-Lopez  
Staff Services Analyst

Attachment



CHAIRPERSON  
**Laura Miranda**  
*Luiseño*

VICE CHAIRPERSON  
**Reginald Pagaling**  
*Chumash*

SECRETARY  
**Merri Lopez-Keifer**  
*Luiseño*

PARLIAMENTARIAN  
**Russell Attebery**  
*Karuk*

COMMISSIONER  
**Marshall McKay**  
*Wintun*

COMMISSIONER  
**William Mungary**  
*Paiute/White Mountain Apache*

COMMISSIONER  
[Vacant]

COMMISSIONER  
**Julie Tumamait-Stenslie**  
*Chumash*

COMMISSIONER  
[Vacant]

EXECUTIVE SECRETARY  
**Christina Snider**  
*Pomo*

**NAHC HEADQUARTERS**  
1550 Harbor Boulevard  
Suite 100  
West Sacramento,  
California 95691  
(916) 373-3710  
[nahc@nahc.ca.gov](mailto:nahc@nahc.ca.gov)  
[NAHC.ca.gov](http://NAHC.ca.gov)

**Native American Heritage Commission  
Native American Contacts List  
April 22, 2020**

Kings River Choinumni Farm Tribe  
Stan Alec  
3515 East Fedora Avenue  
Fresno CA 93726  
(559) 647-3227 Cell

Foothill Yokuts  
Choinumni

Wuksache Indian Tribe/Eshom Valley Band  
Kenneth Woodrow, Chairperson  
1179 Rock Haven Ct.  
Salinas CA 93906  
kwood8934@aol.com  
(831) 443-9702

Foothill Yokuts  
Mono  
Wuksache

Santa Rosa Rancheria Tachi Yokut Tribe  
Leo Sisco, Chairperson  
P.O. Box 8  
Lemoore CA 93245  
(559) 924-1278  
(559) 924-3583 Fax

Tache  
Tachi  
Yokut

Table Mountain Rancheria  
Leanne Walker-Grant, Chairperson  
P.O. Box 410  
Friant CA 93626  
rpennell@tmr.org  
(559) 822-2587  
(559) 822-2693 Fax

Yokuts

Table Mountain Rancheria  
Bob Pennell, Cultural Resources Director  
P.O. Box 410  
Friant CA 93626  
rpennell@tmr.org  
(559) 325-0351  
(559) 325-0394 Fax

Yokuts

Tule River Indian Tribe  
Neil Peyron, Chairperson  
P.O. Box 589  
Porterville CA 93258  
neil.peyron@tulerivertribe-nsn.gov  
(559) 781-4271  
(559) 781-4610 Fax

Yokuts

This list is current as of the date of this document and is based on the information available to the Commission on the date it was produced.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code, or Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans Tribes for the proposed:  
Hanford Place Medical and Mixed-Use Property Project, Kings County.



August 4, 2020

Leo Sisco  
Chairperson  
Santa Rosa Rancheria Tachi Yokut Tribe  
P.O. Box 8  
Lemoore, CA 93245

RE: Hanford Place Medical and Mixed-Use Project in the City of Hanford, Kings County, California.

Dear Mr. Leo Sisco,

Applied EarthWorks, Inc. (Æ) is currently providing cultural resource services to Epic Management Group, Inc. for its Hanford Place Medical and Mixed-Use Project (Project) in the City of Hanford. The 45-acre development would include 15 structures that would cover medical outpatient clinic services, hospitality, specialized education, retail, medical office, skilled nursing and assisted living, and multi-family residences. The project would include a round-about over the top of the Peoples Ditch, and a 5-acre infiltration basin. The project is subject to the requirements of the California Environmental Quality Act.

The Project area is within Townships 18 south, Range 21 east, Section 35 of the Hanford, CA USGS quadrangle (see attached map). If you would like more detailed maps, please contact Æ and we would be more than happy to provide them. A search of the Native American Heritage Commission's (NAHC) Sacred Lands File was completed on April 22, 2020. The NA HC reported negative results in the Project area; however, the NAHC provided your contact information as someone who may have specific information about the Project area and vicinity.

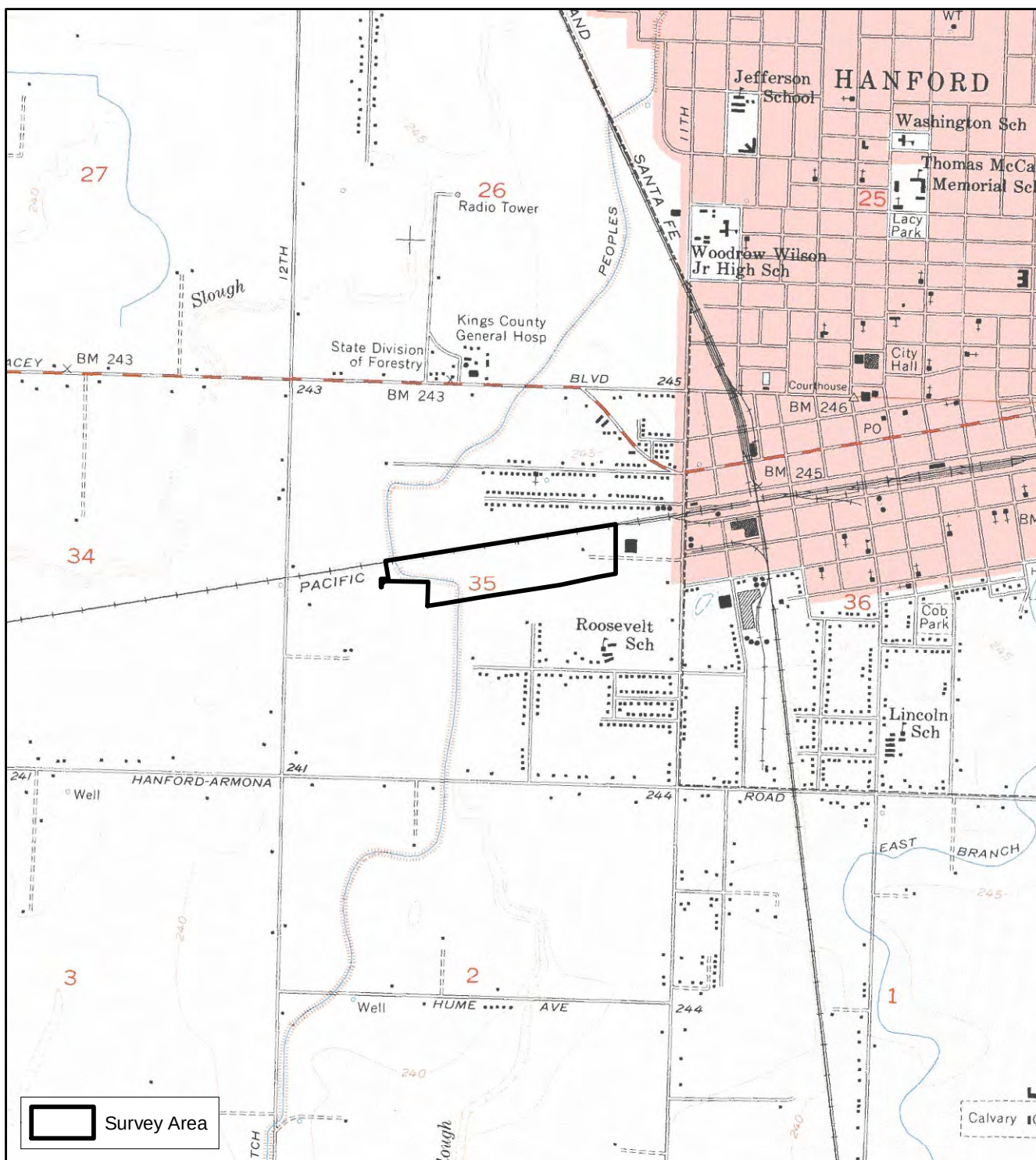
A record search from the Southern San Joaquin Valley Information Center has been performed for the Project, and no previously recorded cultural resources were identified within the Project area. Resources identified within 0.5-mile of the Project area include Peoples Ditch (CA-KIN-97H) and the Southern Pacific Railroad (CA-KIN-00177H). Æ's archaeological and built environment pedestrian survey identified a historic-era refuse scatter and isolated historic-era glass fragment, as well as a previously unrecorded segment of the People's Ditch. No prehistoric archaeological sites, features, or isolated artifacts were observed.

Your name and address were provided to us by the NAHC. If you have information on sacred or special sites in the area or if you have an interest in the Project, please call or send a letter to my attention using the address in the header. With your written permission, information shared with Æ about this Project will be included in the technical report documenting this investigation. Pursuant to state and federal laws protecting the confidentiality of archaeological sites and tribal cultural resources will be protected from release to the general public (Pub. Resources Code § 21082.3[c][1]; NHPA Section 304). I can be reached at the office desk at (559) 229-1856 X123, by cell at (559) 907-6028, or by email at [ddyste@appliedearthworks.com](mailto:ddyste@appliedearthworks.com).

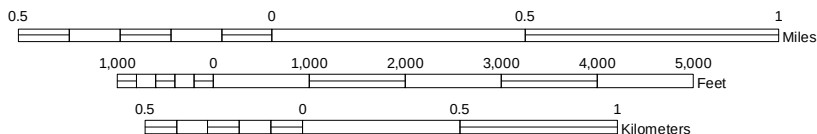
Sincerely,

Diana Dyste,  
Senior Archaeologist

encl.: Project Map



SCALE 1:24,000



Township 18S /Range 21E, Section 35  
Hanford (1950-PR1954), CA 7.5' USGS Quadrangle

NAHC location map for the Hanford Place Medical and Mixed-Use Property Project - AE4167.



## **APPENDIX D**

### **Cultural Resource Records**



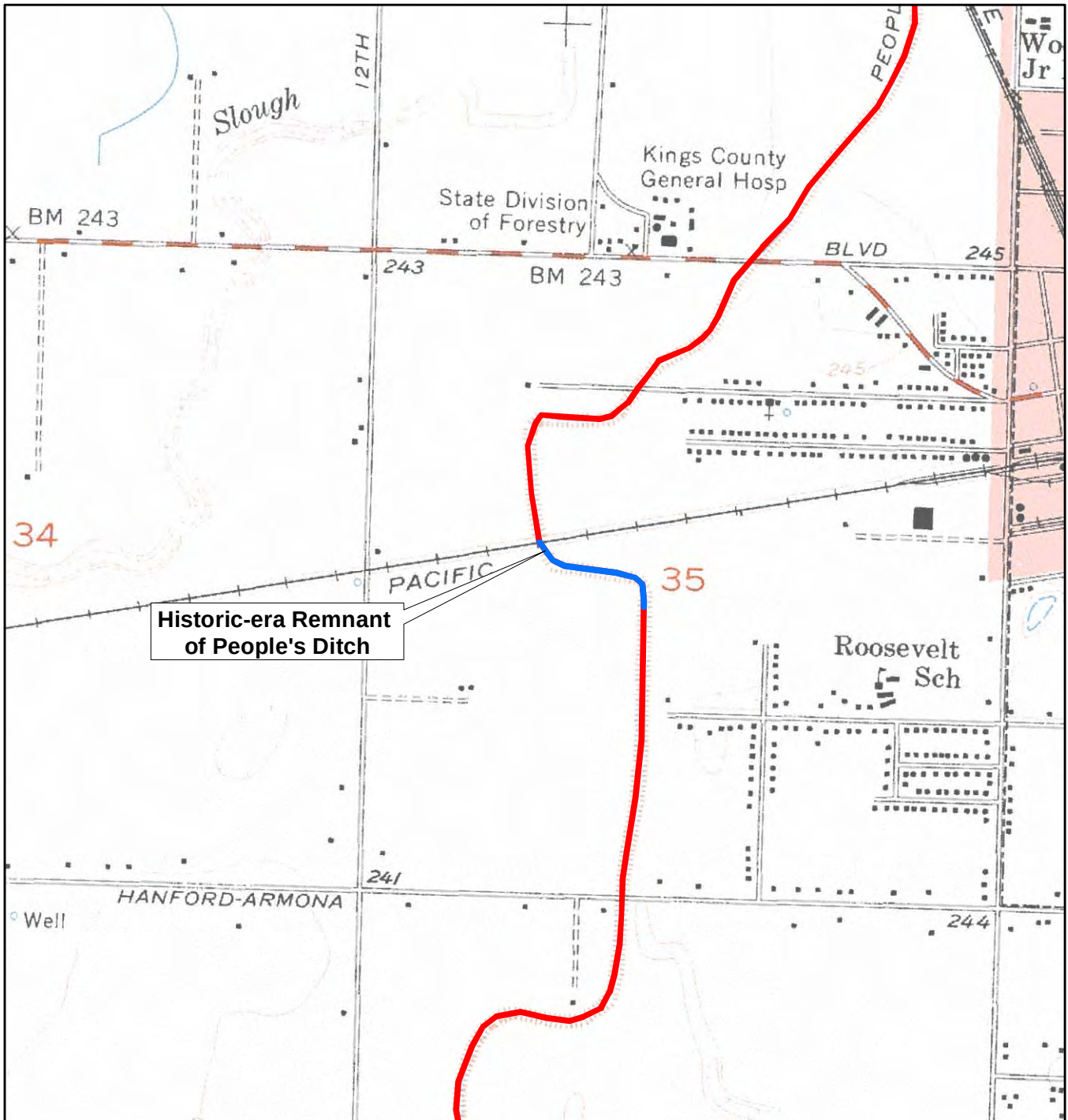
☐ Continuation ☒ Update

Page 1 of 4

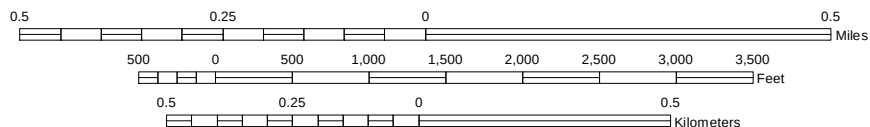
Resource Name or #: People's Ditch

- \*P2. Location: a. County: Kings ☐ Not for Publication ☒ Unrestricted  
b. USGS 7.5' Quad: Hanford, CA Date: 1950, photorev. 1954 T18S, R21E; SE ¼ of NW ¼ of Sec. 35 MD B.M.  
c. Address: N/A  
d. UTM:  
e. Other Locational Data: From the intersection of 11th Street and West Lacey Blvd. in Hanford, CA, drive west for 0.4 miles on West Lacey Blvd. Turn left (south) onto Campus Drive and proceed for 0.4 miles. At this point the road terminates and the modern segment of the People's Ditch continues south. The remnant of the historical alignment is west of the modern segment and north of State Route 198.
- \*P3a. Description: This update includes a 1,327-foot remnant segment of People's Ditch between the Burlington Northern Santa Fe Railway tracks in the north and State Route 198 in the south. According to Google Earth imagery, this segment was abandoned sometime between 1994 and 2003, along with a segment north of the railroad west of Campus Drive. At that time, People's Ditch was realigned and piped under Campus Drive and the railroad tracks for a distance of approximately 1,660 feet. It resurfaces just south of the railroad tracks and continues to flow south in a J-shaped configuration between the railroad and State Route 198 east of its original alignment before crossing under the highway and continuing south parallel to its historical alignment. This new segment is less 50 years old. The ditch's remnant historical segment has been all but erased from the landscape in this area. Remains of a concrete containment well are visible at the northern end of the remnant segment.
- \*P3b. Resource Attributes: HP11. Engineering Structure
- \*P7. Owner and Address: Peoples Ditch Company, 870 Greenfield Ave, Hanford, CA 93230
- \*P8. Recorded By: Carlos van Onna, Applied EarthWorks, Inc., 1391 W. Shaw Ave., Suite C, Fresno, CA 93711
- \*P9. Date Recorded: 5/23/2020
- \*P10. Survey Type: ☒ Intensive ☐ Reconnaissance ☐ Other Describe:
- \*P11. Report Citation: Dyste, Diana T., Jessica Jones, Dennis McDougall, Ward Stanley, and Carlos van Onna 2020 *Cultural Resource Inventory for the Hanford Place Medical and Mixed-Use Property Project in the City of Hanford, Kings County, California*. Applied EarthWorks, Inc., Fresno, California. Prepared for The Hanford Group, c/o Epic Management Group, Inc., Temecula, California.

\*Attachments: ☐ NONE ☒ Location Map ☒ Sketch Map ☐ Continuation Sheet  
☐ Building, Structure, and Object Record ☐ Archaeological Record ☐ District Record ☐ Linear Feature Record  
☐ Photograph Record ☐ Milling Station Record ☐ Rock Art Record ☐ Artifact Record  
☒ Other (list): Location Map showing route entire ditch



SCALE 1:15,000

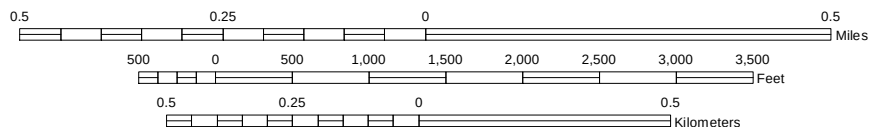


TRUE NORTH



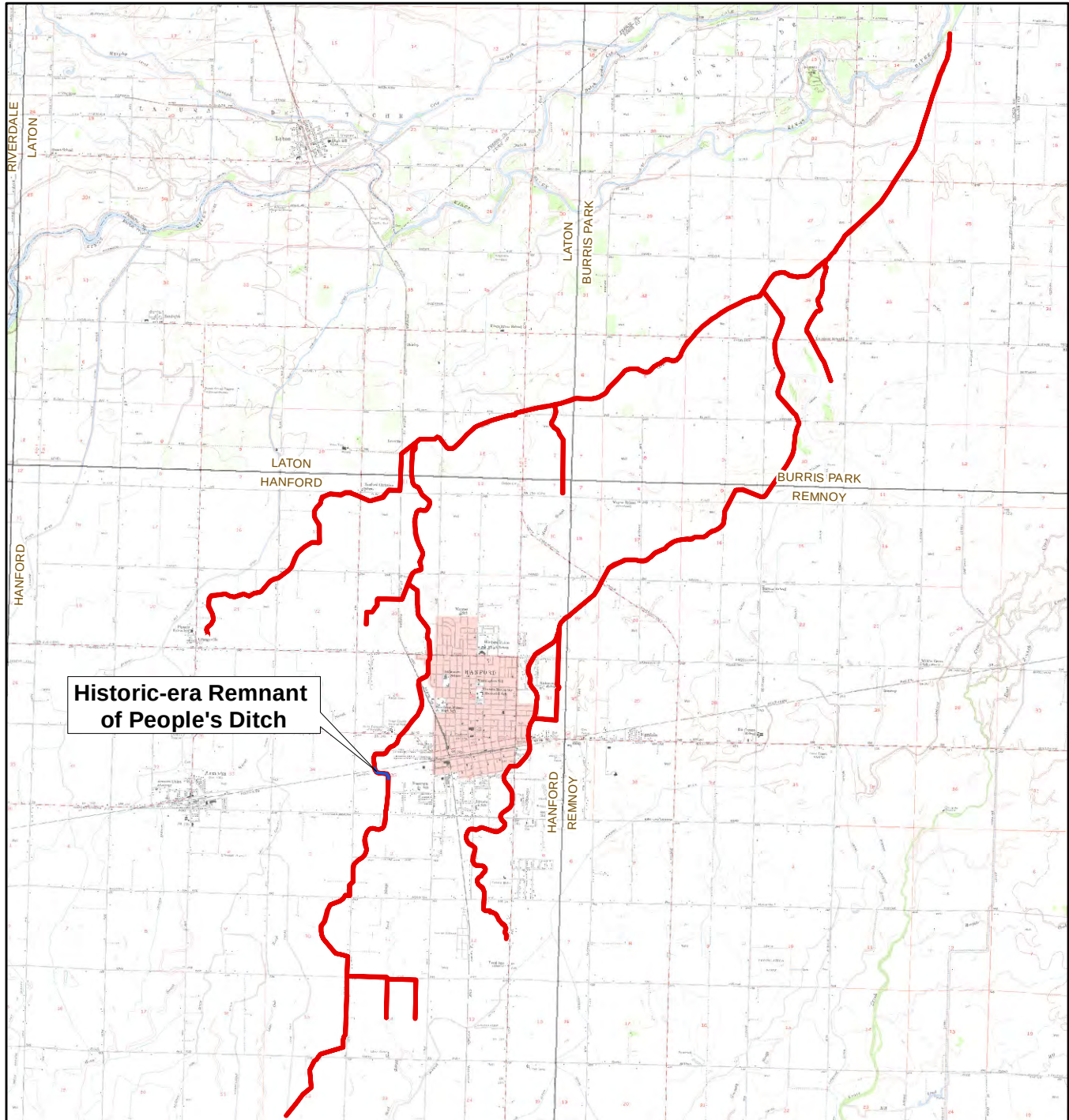


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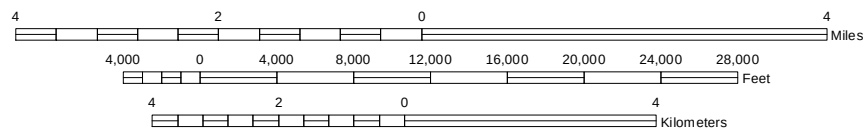


TRUE NORTH





SCALE 1:120,000



TRUE NORTH

State of California — The Resources Agency  
DEPARTMENT OF PARKS AND RECREATION  
**PRIMARY RECORD**

Primary #  
HRI #  
Trinomial  
NRHP Status Code

Other Listings  
Review Code

Reviewer

Date

Page 1 of 2

Resource Name or # AE-4167-01

**P1. Other Identifier:**

**\*P2. Location: a. County:** Kings County

☒ Not for Publication ☐ Unrestricted

**b. USGS 7.5' Quad:** Hanford, CA **Date:** 1950, photorev.1954 T 18S, R 21E; SW ¼ of NE ¼ of Sec. 35 MD B.M.

**c. Address:** n/a

**d. UTM:** NAD 83, Zone 11; 261204 mE / 4022976 mN

**e. Other Locational Data:** From the intersection of 11th Street and West Lacey Blvd. in Hanford, drive west for 0.4 miles on West Lacey Blvd. Turn left (south) on Campus Drive and proceed for 0.4 miles. At this point the road terminates. The site is at 88° at 357 meters (northwest corner of site) in a vacant lot north of State Route 198.

**\*P3a. Description:** The site is a broad historical refuse scatter extending across 6 acres. It consists of domestic refuse, including, but not limited to, window glass of various colors, broken bottles, ceramic fragments, insulators, wood fragments, bricks, river cobbles with cement mortar attached, heavy metal pipe fragments, miscellaneous metal fragments, a toy marble, and a bottle base fragment showing possible pressure flaking along one edge. The scatter is most dense within the northwest corner of the site. A diffuse scatter of isolated artifacts extends beyond this concentration to the south and east site boundaries. A slight topographic rise is present along the entire northern boundary, which is elevated 2 feet high and then levels off. A total of 12 diagnostic artifacts were observed and recorded. Although not formally dated, the artifacts appear to be from the first half of the twentieth century. A 1937 aerial photograph depicts a residence in the site location (Fresno County, California, Aerial Survey 1937 13-ABJ 67-78, <http://cdmweb.lib.csufresno.edu/cdm/singleitem/collection/aerial/id/1178>).

**\*P3b. Resource Attributes:** AH.4

**\*P4. Resources Present:** ☐ Building ☐ Structure ☐ Object ☒ Site ☐ District ☐ Element of District ☐ Other:

**\*P5a. Photograph or Drawing:**



**P5b. Description of Photo:** View of site from the northeast corner, looking west.

**\*P6. Date Constructed/Age and Sources:**  
☐ Prehistoric ☒ Historic ☐ Both

**\*P7. Owner and Address:**  
The Hanford Group  
c/o Epic Management Group,  
Inc. 44045 Margarita Road,  
Suite #100 Temecula, CA 92592

**\*P8. Recorded By:** Ward Stanley  
Applied EarthWorks, Inc.  
1391 W. Shaw Ave., Suite C  
Fresno, CA 93711

**\*P9. Date Recorded:** 5/23/2020

**\*P10. Survey Type:** ☒ Intensive  
☐ Reconnaissance ☐ Other

**Describe:** Pedestrian survey at 15-meter interval transects.

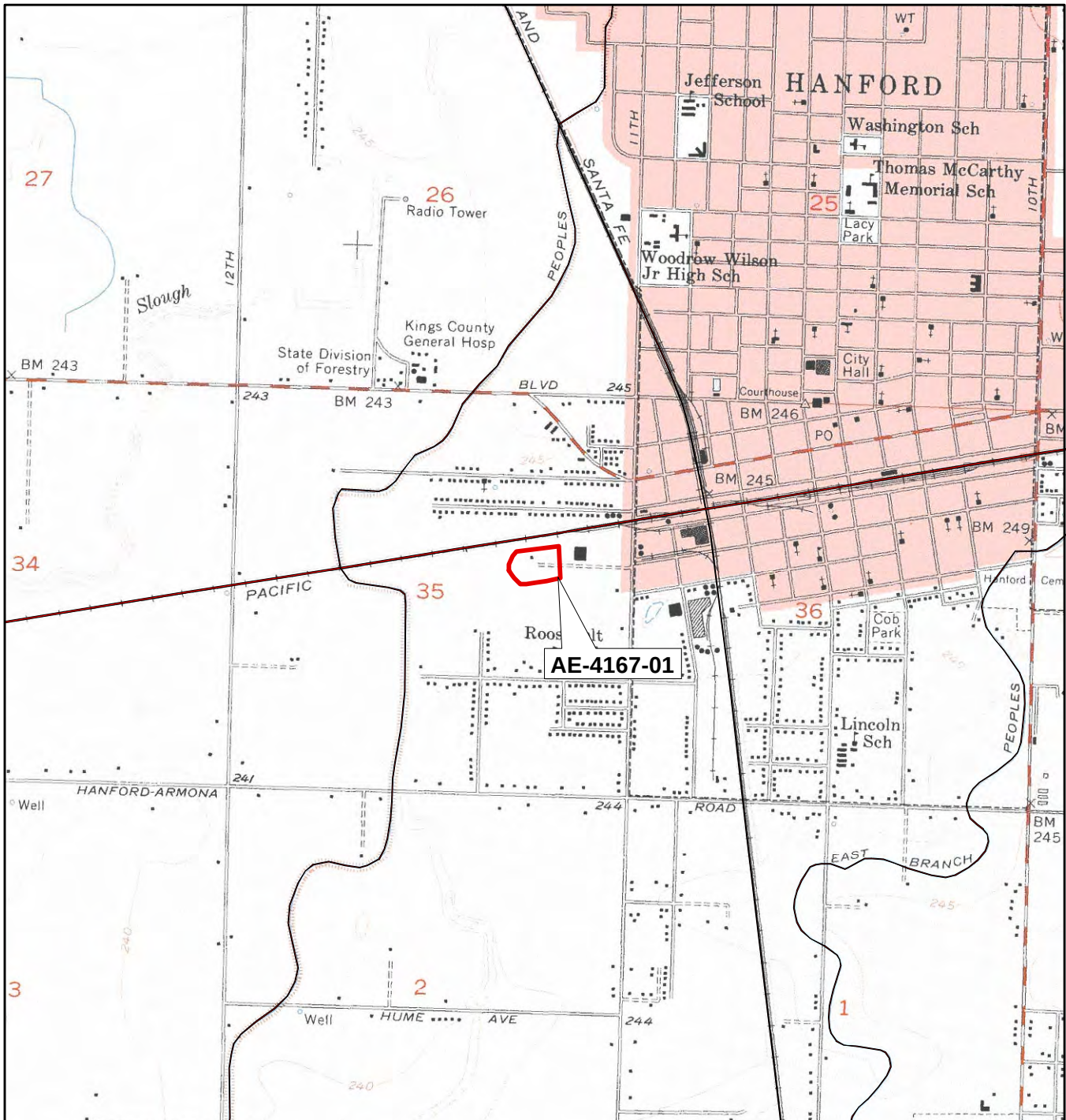
**\*P11. Report Citation:** Dyste, Diana T., Jessica Jones, Dennis McDougall, Ward Stanley, and Carlos van Onna  
2020 *Cultural Resource Inventory for the Hanford Place Medical and Mixed-Use Property Project in the City of Hanford, Kings County, California*. Applied EarthWorks, Inc., Fresno, California. Prepared for The Hanford Group, c/o Epic Management Group, Inc., Temecula, California.

**\*Attachments:** ☐ NONE ☒ Location Map ☐ Sketch Map ☐ Continuation Sheet  
☐ Building, Structure, and Object Record ☐ Archaeological Record ☐ District Record ☐ Linear Feature Record  
☐ Photograph Record ☐ Milling Station Record ☐ Rock Art Record ☐ Artifact Record  
☐ Other (list):

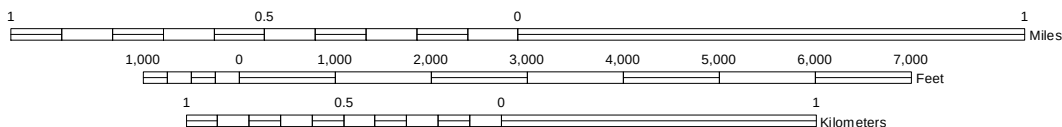
DPR 523A (1/95)

**\*Required Information**





SCALE 1:24,000



TRUE NORTH

State of California — The Resources Agency  
DEPARTMENT OF PARKS AND RECREATION  
**PRIMARY RECORD**

Primary #

HRI #

Trinomial

NRHP Status Code

Other Listings  
Review Code

Reviewer

Date

Page 1 of 2

Resource Name or # AE-4167-ISO-01

**P1. Other Identifier:**

**\*P2. Location: a. County:** Kings County

☒ Not for Publication ☐ Unrestricted

**b. USGS 7.5' Quad:** Hanford, CA **Date:** 1950, photorev. 1954 T 18S, R 21E; SW ¼ of NE ¼ of Sec. 35 MD B.M.

**c. Address:** N/A

**d. UTM:** NAD 83, Zone 11; 2610931 mE / 4022861 mN

**e. Other Locational Data:** From the intersection of 11th Street and West Lacey Blvd. in Hanford, drive west for 0.4 miles on West Lacey Blvd. Turn left (south) on Campus Drive and proceed for 0.4 miles. At this point the road terminates and the isolated find was located 141° at 146 meters from this point.

**\*P3a. Description:** The isolated artifact is an aqua blue glass insulator fragment. The insulator was found on the ground surface east of the Peoples Canal. The artifact was collected.

**\*P3b. Resource Attributes:**

**\*P4. Resources Present:** ☐ Building ☐ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☒ Other: Isolate

**\*P5a. Photograph or Drawing:**



**P5b. Description of Photo:** Fragmented aqua blue glass insulator.

**\*P6. Date Constructed/Age and Sources:**

☐ Prehistoric ☒ Historic ☐ Both

**\*P7. Owner and Address:**

The Hanford Group  
c/o Epic Management Group, Inc.  
44045 Margarita Road, Suite #100  
Temecula, CA 92592

**\*P8. Recorded By:** Ward Stanley

Applied EarthWorks, Inc.  
1391 W. Shaw Ave., Suite C  
Fresno, CA 93711

**\*P9. Date Recorded:** 5/23/2020

**\*P10. Survey Type:** ☒ Intensive

☐ Reconnaissance ☐ Other

**Describe:** Pedestrian survey at 15-meter interval transects.

**\*P11. Report Citation:** Dyste, Diana T., Jessica Jones, Dennis McDougall, Ward Stanley, and Carlos van Onna  
2020 *Cultural Resource Inventory for the Hanford Place Medical and Mixed-Use Property Project in the City of Hanford, Kings County, California*. Applied EarthWorks, Inc., Fresno, California. Prepared for The Hanford Group, c/o Epic Management Group, Inc., Temecula, California.

**\*Attachments:** ☐ NONE

☐ Building, Structure,  
and Object Record  
☐ Photograph Record

☒ Location Map

☐ Archaeological Record  
☐ Milling Station Record  
☐ Other (list):

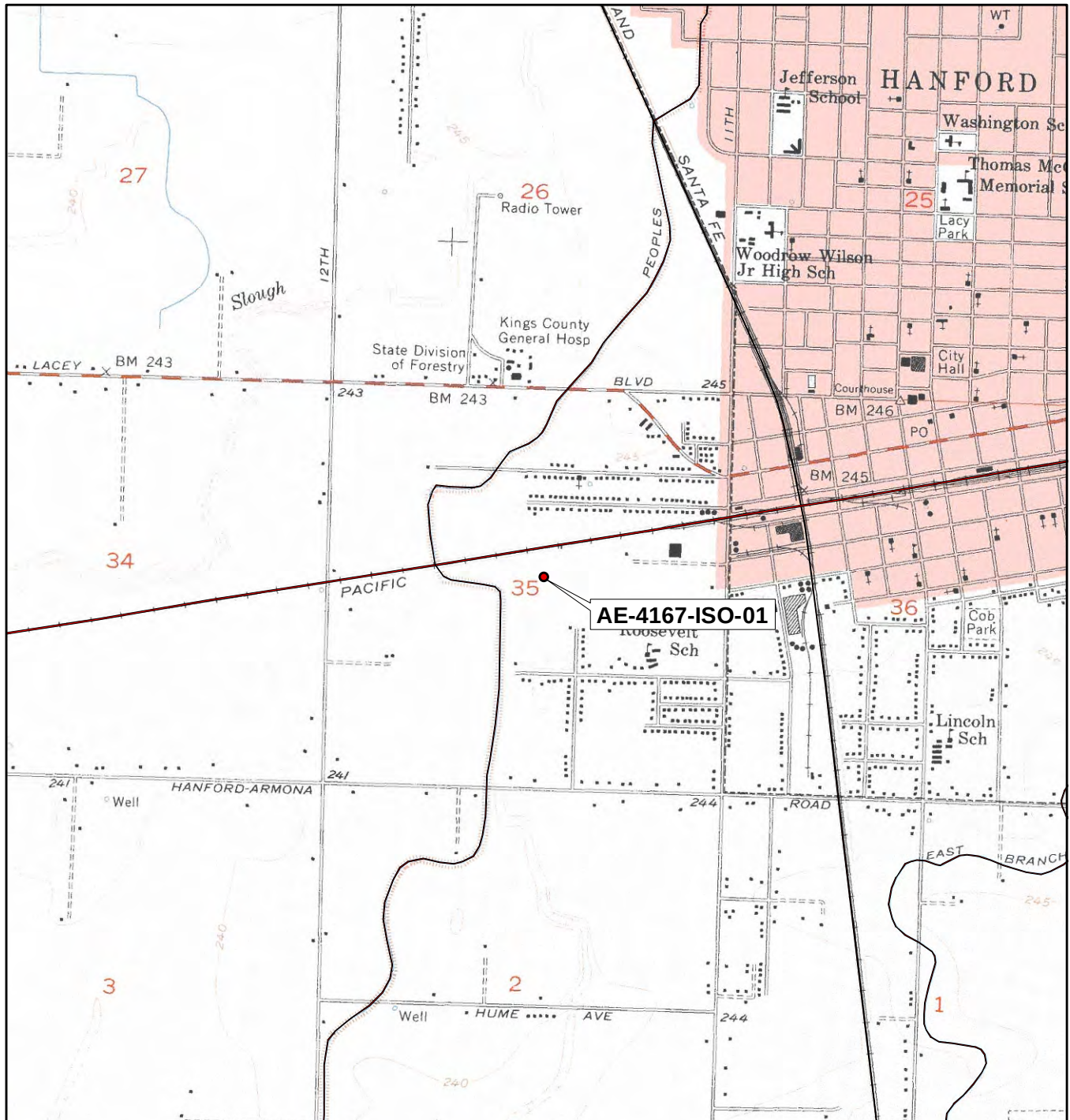
☐ Sketch Map

☐ District Record  
☐ Rock Art Record

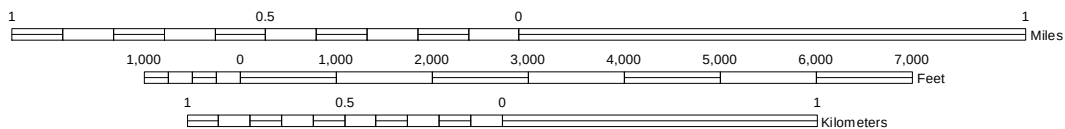
☐ Continuation Sheet

☐ Linear Feature Record  
☐ Artifact Record





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TRUE NORTH

## APPENDIX D

# PRELIMINARY GEOTECHNICAL INVESTIGATION AND GEOLOGIC AND SEISMIC HAZARDS EVALUATION REPORT

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June 9, 2020  
Kleinfelder Project No.: 20210045.001A

**Mr. Burley Wright**  
**Vice President, Development**  
**Epic Management Group, Inc.**  
44045 Margarita Rd., Suite 100  
Temecula, California 92592  
Direct: (951) 746-0012  
Office: (951) 331-3583

**Subject: Preliminary Geotechnical Investigation and  
Geologic and Seismic Hazards Evaluation Report  
Propose Hanford Place, Medical and Mixed-Use Property  
Hanford, California**

Dear Mr. Wright,

The attached report presents the results of Preliminary Geotechnical Investigation and Geologic and Seismic Hazards Evaluation performed for the proposed Hanford Place, Medical and Mixed-Use Property to be located in Hanford, California. The report describes the study, findings, conclusions and recommendations for use in project design.

The primary concern for development of the site is presence of compressible soils residing in the upper approximately 10 feet of native soils across the project site. These soils are subject to hydrocompaction, which is a common soil condition in the Hanford area. Hydrocompactive soil has a loose skeletal structure, which is weakly cemented by soluble salts and/or minor amounts of clay. Increases in soil moisture reduce the interparticle cementation (dry strength) of the soil resulting in a decrease in the volume of the soil structure. This condition can lead to post construction settlement of structures if soils subsequently become wetted. At the present moisture content, the on-site natural soil has sufficient strength to support the proposed preliminary improvements. However, should the soil be subject to post-construction moisture increases, moderate soil compression will likely occur below structures and related site improvements.

The effects of hydrocompactive soil can be mitigated through earthwork excavation and recompaction of the soils. Disposal of the soils is not necessary. From a development perspective, the efforts associated with the additional earthwork to mitigate the hydrocompactive soils will increase site development costs.

Kleinfelder considered an alternative option to mitigate against the settlement of the structures due to hydrocompaction, which involved the use of deep foundation systems (such as drilled pier foundations, auger cast piles, underpinning piers, etc.). However, supporting building structures on deepened foundation systems does not mitigate the occurrence of liquefaction and therefore, would invariably require the use of grade beams and structural slabs in addition to deepened foundations. The deepened foundations, grade beams, and structural would likely be cost

prohibitive as compared to conventional grading techniques and therefore was excluded deep foundations as an option.

Kleinfelder appreciates the opportunity to provide geotechnical engineering and geologic services to Epic Management Group, Inc. during the design phase of this project. If there are any questions concerning the information presented in this report, please contact this office at your convenience.

Respectfully submitted,

**KLEINFELDER, INC.**



Adam AhTye, PE  
Project Engineer



James A. Wetenkamp, CEG #2556  
Project Engineering Geologist



Stephen P. Plauson, PE, GE  
Principle Geotechnical Engineer





**PRELIMINARY GEOTECHNICAL INVESTIGATION  
AND GEOLOGIC AND SEISMIC HAZARDS  
EVALUATION REPORT  
PROPOSED HANFORD PLACE, MEDICAL AND  
MIXED-USE PROPERTY  
HANFORD, CALIFORNIA  
KLEINFELDER PROJECT NO. 20190494.001A**

**JUNE 9, 2020**

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ONLY THE CLIENT OR ITS DESIGNATED REPRESENTATIVES MAY USE THIS DOCUMENT AND ONLY FOR THE SPECIFIC  
PROJECT FOR WHICH THIS REPORT WAS PREPARED.

Prepared For:

Epic Management Group, Inc.  
44045 Margarita Rd., Suite 100  
Temecula, California 92592

**PRELIMINARY GEOTECHNICAL INVESTIGATION AND  
GEOLOGIC AND SEISMIC HAZARDS EVALUATION REPORT  
PROPOSED HANFORD PLACE, MEDICAL AND MIXED-USE PROPERTY  
HANFORD, CALIFORNIA**

Prepared by:



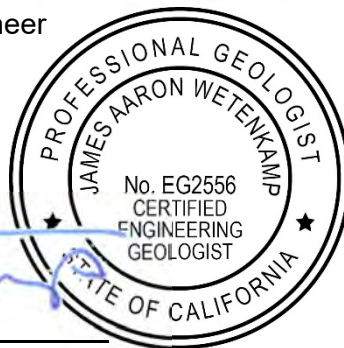
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Adam AhTye, PE  
Project Engineer



---

Stephen P. Plauson, PE, GE  
Principal Geotechnical Engineer



---

James A. Wetenkamp, PG, CEG #2556  
Project Engineering Geologist

**KLEINFELDER, INC.**  
3731 W. Ashcroft Avenue  
Fresno, California 93722  
Phone: 559.486.0750  
Fax: 559.442.5081

June 9, 2020  
Kleinfelder Project No.: 20190494.001A

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- 3 Site Plan and Geology Map
- 4 Area Geology Map
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- 9 Fema Flood Map
- 10 Dam Inundation Map

## **APPENDICES**

- A Boring Logs
- B Laboratory Results
- C Liquefaction Analysis

## 1 INTRODUCTION

---

### 1.1 GENERAL

This report presents the results of a preliminary geotechnical investigation and geologic and seismic hazards evaluation for the proposed Hanford Place medical and mixed-use property to be located in Hanford, California. The purpose of the investigation was to explore and evaluate the subsurface conditions at the site, identify and assess potential geologic hazards, and develop preliminary geotechnical engineering recommendations to aid in project design. The Site Vicinity Map, presented on Figure 1, shows the location of the project and the Exploration Location Map, presented on Figure 2, shows the approximate boring locations.

This report includes preliminary recommendations related to the geotechnical and geologic aspects of project design. Conclusions and recommendations presented in this report are based on subsurface conditions encountered at the boring locations, as well as the provisions and requirements outlined in the “Additional Services” and “Limitations” Sections of this report. Recommendations presented herein should not be extrapolated to other areas or used for other projects without prior review.

### 1.2 PROPOSED CONSTRUCTION

An understanding of the project is based on an email correspondence with representatives of the developer’s design team, Zumwalt-Hansen and Associates (Zumwalt) and Epic Management Group, and a conceptual site plan of the proposed building locations. It is understood that approximately 43 acres of undeveloped land are part of a preliminary plan for development of a medical and mixed-use facilities project.

The development is anticipated to include multi-story (up to 4-story) care and treatment facilities, multifamily residential, a hospitality/conference center, 1 to 2 story medical offices and retail buildings, and a storm water infiltration basin. The structures are anticipated to consist of wood, steel, or concrete structures supported on shallow spread foundations and concrete slab-on-grade floors. For the preliminary study, maximum wall and column loads are assumed to be less than 5 kips per foot and 200 kips, respectively.

Appurtenant improvements are anticipated to include off-site asphalt concrete pavements, on-site asphalt and Portland cement concrete pavements, underground utilities, sound walls, hardscape, and landscaping. It is assumed that other improvements may include covered parking and storm water basins. Grading plans were not available at the time of this proposal. However, cuts and fills of up to 3 feet in vertical extent are anticipated to create parking/pad grades and positive site drainage. The infiltration basin is anticipated to be a depth of approx. 15 feet.

The project scope also includes relocating the existing open-cut Peoples Ditch to an underground reinforced concrete pipe. The existing ditch is approx. 3.5 feet deep, measured from the original ground, with approx. 2.5-foot tall embankments. The proposed pipe is anticipated to be a diameter of 5.5 feet and maintain the existing alignment.

### 1.3 PURPOSE AND SCOPE OF SERVICES

The purpose of the geotechnical investigation was to explore the site subsurface conditions and develop recommendations and professional opinions to assist in project design. The scope of our services was outlined in Kleinfelder's proposal dated May 21, 2019 and included the following:

- A description of the proposed project, including a vicinity map showing the location of the site, a site plan showing the locations of the exploration points for this study, and a geologic cross-section
- A description of the site surface and subsurface conditions encountered during the field investigation, including boring logs
- A summary of the field exploration and laboratory testing program
- Comments on depth to groundwater and potential impact on design and construction
- Recommendations for site preparation and earthwork grading, including a discussion concerning the use of on-site soils for engineered fill
- Recommendations for conventional foundation design, including available bearing capacity of foundation soil for sustained and total combined loading and estimated settlement
- Recommendations for frictional coefficient and passive pressure for resistance of lateral loads



- Recommendations to aid in design of concrete slabs-on-grade, including modulus of subgrade reaction
- Recommendations for earth retaining structures
- Recommendations to aid in design of pier/pole foundations for miscellaneous sign, light, and canopy structures
- Recommendations for asphalt and Portland cement concrete pavement sections paced on a range of truck traffic indexes
- Discussion of the general corrosion characteristics of the site soils, and
- Comments to aid in the design of site drainage.

The purpose of the geologic and seismic hazards assessment is to identify and assess potential geologic and seismic hazards at the site. We understand that the facility does not fall under the jurisdiction of the California Office of Statewide Health Planning and Development (OSHPD); however, to meet the standard of care for medical facilities this report has been prepared in accordance with the requirements for such studies set forth by the Essential Services Buildings Seismic Safety Act of 1986 and defined in the California Code of Regulations, Title 24, 2019 California Building Code (CBC) using guidelines outlined by the California Geological Survey (CGS). In addition to these documents, this report is prepared in accordance with the guidelines established in the following documents:

- CGS Note 48 (Checklist for the Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals, and Essential Services Buildings),
- CGS Note 44 (Recommended Guidelines for Preparing Engineering Geologic Reports),
- CGS Note 42 (Guidelines to Geologic/Seismic Reports),
- CGS Special Publication 42 (Fault Rupture Hazard Zones in California),
- CGS Note 41 (Guidelines for Reviewing Geologic Reports), and
- CGS Special Publication 117A (Guidelines for Evaluating and Mitigating Seismic Hazards in California).

The geologic and seismic hazards evaluation includes the following items:

- Research and review of pertinent geologic, geotechnical, and seismologic publications and maps covering the site and vicinity in Kleinfelder's library;
- Evaluation of geologic conditions including the results of the boring and laboratory testing of soil samples completed during the geotechnical investigation;
- Estimate of Site Class per Table 1613A.5.2 of 2019 CBC;
- Provide seismic design parameters per Chapter 1613A of 2019 CBC;
- Conclusions regarding fault rupture, ground accelerations, and ground failure potential;
- Conclusions regarding the potential for liquefaction, seismic settlement and compaction, flooding, tsunamis, seiches, seismically induced landsliding, lurching and lateral spreading; and
- Preparation of this written report for the site with conclusions and recommendations as required regarding geologic and seismic hazards.

The references reviewed for compilation of this report are listed in the "References" section of this report. Observations and conclusions presented herein specifically exclude the assessment of environmental characteristics, particularly those involving hazardous substances.

## 2 FIELD EXPLORATION AND LABORATORY TESTING

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### 2.1 FIELD EXPLORATION

The field exploration, conducted on April 20 and 21, 2020 consisted of drilling nine (9) exploratory test borings. The test borings were drilled with a CME-75 truck-mounted drill rig utilizing hollow stem auger techniques. The borings were advanced to depths ranging from approximately 16.5 to 51.5 feet below the existing ground surface (bgs). Additionally, seven (7) bulk samples of the near surface soils in areas of proposed pavements were collected for R-value testing. The approximate locations of the test borings and R-values are indicated on the Exploration Location Map, Figure 2.

The soils encountered in the borings were visually classified in the field and a continuous log was recorded. Relatively undisturbed samples were collected from the test borings at selected depths by driving a 2.5-inch I.D. split barrel sampler containing brass liners into the undisturbed soil with a 140-pound automatic hammer free falling a distance of 30 inches and having an energy efficiency rating of 89 percent. In addition, samples of the subsurface material were obtained using a 1.5-inch I.D. standard penetrometer, driven 18 inches in accordance with American Society for Testing and Materials (ASTM) D1586 test procedures. The sampler was used without liners. Resistance to sampler penetration was noted on the boring logs as the number of blows per foot over the last 12 inches of sampler penetration. The blow counts listed in the boring logs have not been corrected for the effects of overburden pressure, rod length, sampler size, or hammer efficiency. Bulk samples were also obtained from auger cuttings at one boring location.

### 2.2 FIELD AND LABORATORY TESTING

Penetration rates, determined in general accordance with ASTM D1586, were used to aid in evaluating the consistency, relative density, compression and strength characteristics of the foundation soils. Extensive experience in the central and southern San Joaquin Valley has shown correlations and design methodologies utilizing the standard penetration test (SPT) data best defines performance in the local unsaturated soil.

Laboratory tests were performed on selected samples to evaluate certain physical characteristics. The following laboratory tests were used to develop the design geotechnical parameters:

- Unit weight (ASTM D2937)
- Moisture content (ASTM D2216)
- Amount of Material in Soils Finer Than the No. 200 Sieve (ASTM D1140)
- Atterberg Limits (ASTM D4318)
- Collapse Potential (ASTM D5333)
- Direct Shear (ASTM 3080)
- Modified Proctor (ASTM D1557)
- Soluble Sulfate Content (California Test Method No. 417)
- Soluble Chloride Content (California Test Method No. 422)
- pH and Minimum Resistivity (California Test Method No. 532)
- R-Value (ASTM D2844)

The dry density and moisture content test results are shown on the boring logs in Appendix A. The soluble sulfate, soluble chloride, pH and minimum resistivity are discussed in the “Corrosion Potential” section (Section 6.7). The remaining test results are provided in Appendix B.

### 3 SITE CONDITIONS

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#### 3.1 SURFACE CONDITIONS

The project site consists of approximately 43 acres of undeveloped land located between 11<sup>th</sup> and 12<sup>th</sup> Avenues, and Highway 198 and Union Pacific railroad tracks. The western approx. third and eastern approx. two thirds of the site are currently divided by Peoples Ditch, an open-cut canal traversing the site. It is understood that the People's Ditch is anticipated to be converted to an underground reinforced concrete pipe within the project limits. Based on Google Earth imagery, it appears Peoples Ditch traversed the site along the western boundary of the project site. This alignment was abandoned circa early- to mid-2000s, coincident with the construction of the Adventist Health Medical Center located north, north-west of the project site.

At the time of field reconnaissance, the project site supported a moderate growth of annual grasses and weeds. The project site appeared to be relatively flat and at the same relative elevation of the nearby roads. It is understood the project site is periodically plowed for fire hazard mitigation.

At the time of the investigation, loose sediments within Peoples Ditch was probed to a depth of approximately 2 to 2.5 feet below the ditch bottom.

#### 3.2 EARTH MATERIALS

The following description provides a general summary of the subsurface conditions encountered during the field exploration and as further evaluated through the laboratory testing program. For a more thorough description of the actual conditions encountered at specific boring locations, refer to the boring logs presented in Appendix A. The soils were classified according to the Unified Soil Classification System (ASTM D2487).

The subsurface soils consist Holocene aged Great Valley fan deposits. The general soil profile encountered by the subsurface exploration consisted primarily of silty sand and sandy silt to depth of approximately 10 to 15 feet bgs underlain by laterally discontinuous layers of silty clay, sandy silt, silty sand, and poorly graded sand. The granular soils had a relative consistency of medium dense to very dense and the fine-grained soils had a relative consistency of stiff to very stiff.

Geologic cross sections, interpreted from the test borings, are presented on Figure 6. The site geology and locations of the cross sections are presented on Figure 3.

### 3.3 GROUNDWATER CONDITIONS

Groundwater was not encountered in the explorations. However, perched water was encountered within boring B-7 at a depth of approximately 45 feet bgs at the time of investigation. It is anticipated that the observed groundwater at the time of drilling was a perched on a dense layer of silty clay. Research utilizing the California Department of Water Resources (DWR) Water Data Library website indicate groundwater levels to be greater than 50 feet bgs in 2011 (Well No. 18S21E34B002M) located approximately ½ mile northwest of the site. Additional research utilizing the DWR website indicated that the historic high groundwater depth was recorded at 15 feet in the late 1960's. However, a steady decline in the depth to groundwater can be observed to current depths shown on the DWR website.

It is possible that groundwater conditions at the site could change at some time in the future due to variations in rainfall, groundwater withdrawal, regional agricultural production, construction activities, groundwater recharge practices, or other factors not apparent at the time our test borings were performed. However, groundwater is not anticipated to impact design or construction. Considering the elevated groundwater levels in the early 1970's due to reservoir management practices (15 feet) and elevated groundwater levels in the mid-1980's due to precipitation (51 feet), it is suggested that the high groundwater level of 15 feet will not realistically occur in the future. It is understood that recharge programs such as Sustainable Groundwater Management Act (SGMA) may increase the current groundwater levels. However, it is anticipated the City will limit the amount of recharge and subsequent rise in groundwater due to potential damage to underground infrastructure. Therefore, Kleinfelder recommends a design high groundwater depth to be 25 feet bgs.

## 4 GEOLOGIC AND SEISMIC CONDITIONS

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### 4.1 REGIONAL GEOLOGY

The proposed facility lies in the southern portion of the Great Valley geomorphic province near its boundary with the Sierra Nevada geomorphic province in Central California. The filling of a large structural trough or downwarp in the underlying bedrock formed the Great Valley province of California. The trough is situated between the Sierra Nevada Range on the east and the Coast Range on the west. Both of these mountain ranges were initially formed by uplifts, which occurred during the Jurassic and Cretaceous periods (greater than 65 million years ago). Renewed uplift began in the Sierra Nevada during late Tertiary time and is continuing today. The trough, which underlies the Valley, is asymmetrical with the greatest depth of sediments near the western margin. The sediments, which fill the trough, originated as erosional material from the adjacent mountains and foothills. The upper and youngest sediments in the basin are continental deposits consisting of alluvial fan deposits and flood-basin, lake, and marsh deposits. Figure 5 provides a detailed regional geologic map of the area by the California Geologic Survey (CGS) (Geologic Map of California, v. 2.0, 2010).

### 4.2 AREA AND SITE GEOLOGY

The majority of the native sediments in the project area have been mapped (Fresno geologic sheet) by CGS (Geologic Map of California, Fresno Sheet, Matthews and Burnett 1965). The site is located within the Holocene age Recent Alluvial Fan Deposits in the Great Valley (map symbol Qf). The soil subgrade characteristics encountered during the field investigation (i.e. soil type, blow count, etc.) appear to be consistent with this mapped unit. Figure 4 presents a site-specific geologic map of the project. The U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) has mapped the soils on the entire project site as Nord Complex (149). Based on the map unit description of the NRCS, soils designated with map units of 149 consist of alluvial deposits derived from igneous rock sources which corresponds to Unified Soil Classification group symbol of SM (Silty Sand) and ML (Sandy Silt).



#### 4.3 FAULTS LOCAL TO THE PROPOSED SITE

Based on the information provided in the California Geological Survey Special Publication 42 (CGS, 2018), the site is not located within a State-designated Alquist-Priolo Earthquake Fault Zone, where site-specific studies addressing the potential for surface fault rupture are required. No known active faults traverse the site. The project site is situated within a region traditionally characterized by few active faults and a low to moderate potential for seismic activity.

An active fault is a fault that has experienced seismic activity during historic time (since roughly 1800) or exhibits evidence of surface displacement during Holocene time (CGS, 2018). The terms “sufficiently active” and “well-defined” are used by the CGS as criteria for zoning faults under the Alquist-Priolo Earthquake Fault Act. A “sufficiently active fault” is a fault that shows evidence of Holocene surface displacement along one or more of its segments and branches, while a “well-defined fault” is a fault whose trace is clearly detectable by a trained geologist as a physical feature at or just below the ground surface. The definition “inactive” generally implies that a fault has not been active since the beginning of the Pleistocene Epoch (older than 2.6 million years).

Locations of the significant active and well-defined faults are shown on Figure 7. The site is located approximately 94 km east from the San Andreas fault and 42 km east of the Great Valley fault. A major seismic event on these fault segments may cause significant ground shaking at the site.

#### 4.4 SIGNIFICANT FAULTS

The faults within 100 km of the site, and their seismic parameters are listed in Table 4.4-1. For faults with multiple segmentation scenarios, Kleinfelder has only listed parameters for the scenario rupturing the most segments (i.e., the most severe scenario). The locations of the faults, presented on Figure 7, and associated parameters, presented on Table 4.4-1, are based on the USGS 2008 National Seismic Hazard Maps (Petersen et al., 2008). The maximum earthquake magnitudes presented in this table are based on the moment magnitude scale developed by Kanamori (1977).

**Table 4.4-1  
Significant Faults**

| <b>Fault Name</b> | <b>Fault Length (km)</b> | <b>Closest Distance<sup>1</sup> (km)</b> | <b>Maximum Earthquake Magnitude<sup>2</sup></b> | <b>Slip Rate (mm/yr)</b> |
|-------------------|--------------------------|------------------------------------------|-------------------------------------------------|--------------------------|
| Great Valley 14   | 24                       | 42                                       | 7.2                                             | 1.5                      |
| Great Valley 13   | 32                       | 45                                       | 7.1                                             | 1.5                      |
| Great Valley 12   | 17                       | 62                                       | 6.4                                             | 1.5                      |
| Great Valley 11   | 24                       | 73                                       | 6.6                                             | 1.5                      |
| San Andreas       | 245                      | 85                                       | 8.0                                             | 34                       |
| San Juan          | 68                       | 91                                       | 7.1                                             | 1.5                      |
| Great Valley 10   | 22                       | 95                                       | 6.5                                             | 1.5                      |

<sup>1</sup>Closest distance to the potential rupture.

<sup>2</sup>*Moment magnitude*: An estimate of an earthquake's magnitude based on the seismic moment (measure of an earthquake's size utilizing rock rigidity, amount of slip, and area of rupture).

Table 4.4-1 represents the scenarios of rupturing all the segments for these faults. Other rupture scenarios can be found in Field et al. (2008).

#### 4.5 HISTORICAL SEISMICITY

The project site and vicinity are located in an area characterized by historically low seismicity. A number of earthquakes have occurred within a 100 km radius of the site during historic time (since 1800). Some of the significant regional earthquake events include the 1857 (M7.9) Fort Tejon earthquake, located approximately 90 km to the southwest of the site; the 1983 (M6.7) Coalinga earthquake, located about 59 km to the southwest; and the 1922 (M6.5) Parkfield earthquake, located about 83 km to the southwest.

Epicenters of some significant earthquakes ( $M \geq 4.0$ ) within the vicinity of the site are shown on Figure 7. The earthquake database used in the search contains in excess of 5,500 seismic events and covers the period from 1800 through May 2020. The earthquake database is primarily comprised of an earthquake catalog for the State of California prepared by the CGS (formerly Division of Mines and Geology, DMG). The catalog contains earthquake records from January 1, 1900 through December 31, 1974. Updates prepared by the CGS in 1979 and 1982 extend the coverage through 1982. In addition to the CGS updates, the data for earthquakes that occurred during the period between 1910 through May 2020 has been obtained from a composite catalog

by the Advanced National Seismic System (ANSS). The ANSS catalog is a worldwide earthquake catalog which is created by merging the master earthquake catalogs from contributing ANSS member networks and then removing duplicate events, or non-unique solutions from the same event. The ANSS network includes the Northern and Southern California Seismic Networks, the Pacific Northwest Seismic Network, the University of Nevada, Reno Seismic Network, the University of Utah Seismographic Stations, and the United States National Earthquake Information Service. The earthquake database also consists of earthquake records between 1800 and 1900 from Seeburger and Bolt (1976) and Topozada et al. (1978, 1981). In addition, we have also utilized the data from DMG Map Sheet 49 (Topozada et al., 2000).

The parameters used to define the limits of the historical earthquake search include geographical limits (within 100 km of the site), dates (1800 through May 2020), and magnitudes ( $M \geq 4$ ). A summary of the results of the historical search is presented in Table 4.5-1.

**Table 4.5-1**  
**Historical Seismicity**

|                                                                  |            |
|------------------------------------------------------------------|------------|
| Time Period (1800 to May 2020)                                   | 220+ years |
| Maximum Magnitude <sup>1</sup>                                   | 7.9        |
| Approximate distance to nearest historical $M \geq 4$ earthquake | 20 km      |
| Number of events exceeding magnitude 4 within search area        | 170        |

<sup>1</sup>Moment magnitude

#### 4.6 SOIL SITE CLASS

Based on the borings in the above referenced report, the supplemental borings performed, and a review of the geologic conditions within the vicinity of the project site, Site Class D would be appropriate for the seismic design of the new facility using the 2019 California Building Code (CBC). The parameters provided below are based on the 2019 CBC. The 2019 CBC is based on the 2018 International Building Code (IBC) and ASCE 7-16. For a 2019 CBC based design, the estimated Maximum Considered Earthquake (MCE) mapped spectral accelerations for 0.2 second and 1 second periods (SS and S1), associated soil amplification factor ( $F_a$ ), and mapped peak ground acceleration (PGA) are presented in Table 4.6-1. Corresponding site modified (SMS) and design (SDS) spectral accelerations, PGA modification coefficient (FPGA), PGAM, risk coefficients (CRS and CR1), and long-period transition period (TL) are also presented in the table below. Presented values were estimated using Section 1613.3 of the 2019 California Building Code (CBC), chapters 11 and 22 of ASCE 7-16, and the Structural Engineers Association of

California (SEAOC) and California Office of Statewide Health Planning and Development (OSHPD) U.S. seismic design maps.

**Table 4.6-1**  
**2019 CBC/ASCE 7-16 seismic design parameters**

| Parameter        | Value <sup>1</sup> | ASCE 7-16 Reference        |
|------------------|--------------------|----------------------------|
| Latitude         | 36.321241°         | -                          |
| Longitude        | -119.664210°       | -                          |
| S <sub>s</sub>   | 0.750g             | Fig 22-1                   |
| S <sub>1</sub>   | 0.271g             | Fig 22-2                   |
| Site Class       | D                  | Table 20.3-1               |
| F <sub>a</sub>   | 1.200              | Table 11.4-1               |
| F <sub>v</sub>   | NA                 | Table 11.4-2, Supplement 1 |
| PGA              | 0.325g             | Fig 22-9                   |
| S <sub>MS</sub>  | 0.900g             | Eq. 11.4-1                 |
| S <sub>M1</sub>  | NA                 | Eq. 11.4-2                 |
| S <sub>DS</sub>  | 0.600g             | Eq. 11.4-3                 |
| S <sub>D1</sub>  | NA                 | Eq. 11.4-4                 |
| F <sub>PGA</sub> | 1.275              | Table 11.8-1               |
| PGA <sub>M</sub> | 0.414g             | Eq. 11.8-1                 |
| C <sub>RS</sub>  | 0.922              | Fig 22-18A                 |
| C <sub>R1</sub>  | 0.927              | Fig 22-19A                 |
| T <sub>L</sub>   | 12 seconds         |                            |

<sup>1</sup>N/A\* = Not Applicable (refer to explanation below)

It should be noted that Section 11.4.8 of ASCE 7-16 requires a site-specific ground motion hazard analysis be performed for Site Class D sites with S<sub>1</sub> values greater than or equal to 0.2g unless structural design exceptions are taken. The subject site meets these criteria. We understand that CGS will assume the structural design exceptions will not be taken and that a site-specific ground motion hazard analysis will be performed. If exceptions are taken, then an F<sub>v</sub> value of 2.058 can be used only to calculate the T<sub>s</sub>, S<sub>M1</sub>, and S<sub>D1</sub> values and only for the purpose of invoking the exceptions in Section 11.4.8 of ASCE 7-16. The calculated S<sub>M1</sub> and S<sub>D1</sub> values based on the F<sub>v</sub> value of 2.058 shall not be used for any other calculations. The structural engineer is required to prepare a letter for submittal to OSHPD and CGS that confirms the exceptions will be taken, otherwise if the exceptions are not taken, a site-specific ground motion hazard analysis will be required.

## 4.7 POTENTIAL SEISMIC HAZARDS

A discussion of specific seismic hazards that could impact the site is included below. The hazards considered include: surface fault rupture; liquefaction and seismic settlement; lateral spreading; dynamic compaction; and cyclic softening.

### 4.7.1 Surface Fault Rupture

Earthquakes are caused by the sudden displacement of earth along faults with a consequent release of stored strain energy. The fault slippage can often extend to the ground surface where it is manifested by sudden and abrupt relative ground displacement. Damage resulting from fault rupture occurs where structures are located astride the fault traces that move. The subject site is not located within, nor is it adjacent to, a state designated Alquist-Priolo Earthquake Fault Zone (CGS, 2018). Based on the reviewed geologic/seismologic reports and maps, no known active, or potentially active faults cross or project toward the site. Therefore, the potential for fault-related surface rupture at the site is considered very low.

### 4.7.2 Liquefaction and Seismic Settlement

A common secondary hazard of strong ground shaking is the potential for soil liquefaction. Liquefaction describes a phenomenon in which saturated soil loses shear strength and deforms as a result of increased pore water pressure induced by strong ground shaking during an earthquake. Dissipation of the excess pore pressures will produce volume changes within the liquefied soil layer, which can manifest at the ground surface as settlement of structures, floating of buried structures, failure of retaining walls, lateral migration (lateral spreading), and extensional ground cracking of liquefied material. Factors known to influence liquefaction include soil type, structure, geologic age, grain size, relative density, confining pressure, depth to groundwater, and the intensity and duration of ground shaking. Soils most susceptible to liquefaction are saturated, loose, sandy soils.

Saturated granular sediments can experience liquefaction if subject to seismically induced ground motion of sufficient intensity and duration. Liquefaction analysis used procedures by Youd et. Al. (2001) and considered the relative density and fines content of the granular settlement. The liquefaction analysis also included screening for the potential for liquefaction utilizing the moisture content and Plasticity Index of fine grained non-cohesive and cohesive soils in accordance with

procedures set forth in Seed et al. (2003). The analysis considered a historic high groundwater depth of 25 feet bgs, ground acceleration ( $PGA_M$ ) of 0.414g, and earthquake moment magnitude  $M_w = 6.21$ .

A screening analysis was not performed for the potential of cyclic liquefaction occurring in the fine grained soils encountered within the boring but were included in the liquefaction analysis for conservatism. Therefore, the coarse and fine grained soil layers were evaluated for potential liquefaction using the cyclic liquefaction analysis model by Seed (2003). Liquefaction analysis performed on the fine grained and granular sediments indicates that liquefaction and seismically induced settlement may occur in the poorly graded sand layers encountered in borings B-6 at depths between 30 to 33 feet and 40 to 43 feet bgs. Also, liquefaction and seismically induced settlement may occur in poorly graded sand layers and deeper silty clay layers encountered in boring B-7 at depths between 38 to 40 feet and 46 to 51.5 feet bgs. However, due to the significant thickness of non-liquefiable overburden soil with moderate to high density, bearing loss is not likely to occur.

Seismically induced settlement due to liquefaction was evaluated to be 0.4 inches by Seed (2003) and 0.1-inch by Idriss and Boulanger (2008) in boring B-6 and 1.5 inches by Seed (2003) and 0.5 inches by Idriss and Boulanger (2008) in boring B-7. The general guidelines of the CGS indicate the differential seismically induced settlement between adjacent supports in a building would be about one-half the total settlement. This would result in an average differential settlement between adjacent supports of approximately 0.15-inch in boring B-6 and 0.5 inches in boring B-7. The anticipated differential settlements are low to moderate and are anticipated to be within the tolerance of the proposed structures and will not result in significant damage or collapse. We assume the structural engineer can accommodate this amount of settlement; therefore, no ground modification for mitigation against liquefaction and/or settlement is recommended.

#### 4.7.3 Lateral Spreading

Lateral spreading is a movement in a nearly horizontal soil zone (usually attributable to liquefaction) that causes the overlying soil mass to shift down a gentle slope or toward a free face such as incised water bodies. Because the site and surrounding areas have generally insignificant topographic relief and the site is not likely to experience significant liquefaction, the potential for lateral spreading is considered very low.

#### 4.7.4 Dynamic Compaction

Dry, loose sands and non-plastic silts may experience some dynamic compaction resulting in surface settlement when subjected to cyclic application of loads such as ground shaking from near-by-seismic events. Given the subsurface conditions encountered above groundwater, it is estimated (Tokimatsu and Seed, 1987) seismic settlement of the non-saturated soil at the site is anticipated to be less than 3/4-inch for analysis based on soil encountered in Borings B-6 and B-7 for both the current groundwater and historic high groundwater conditions.

#### 4.7.5 Cyclic Softening

While liquefaction describes a phenomenon in which saturated “sand-like” (or cohesionless) soils lose strength during an earthquake, cyclic softening describes the loss of strength of “clay-like” (or cohesive) soils during an earthquake. Various researchers agree that plasticity index (PI) is useful in determining if a soil behaves clay-like or sand-like; however, the value of PI for which a clay behaves like a sand is not agreed upon. For this investigation, we have relied upon the methods presented in Idriss and Boulanger (2008) which indicates that soils with a  $PI \geq 7$  behave like a clay. Based on the results of our field and laboratory investigation, and the depth to groundwater, no soft soils susceptible to cyclic softening were encountered at the site.

### 4.8 POTENTIAL GEOLOGIC HAZARDS

The following discusses potential geologic hazards that could impact construction at the project site, including: flooding; expansive soils; hydrocompaction; corrosive soils; regional subsidence; naturally occurring asbestos; and radon. Other geologic hazards such as landslide and volcanic eruption are not considered a potential hazard at this site.

#### 4.8.1 Flooding

##### 4.8.1.1 Tsunamis, Seiches, Earthquake Induced Flooding

Tsunamis are sea waves of unusual size that occur from significant earthquakes either under the ocean floor or adjacent to shorelines and can travel great distances to impact low-lying communities and developments. Considering that the Coast Range protects the site from the sea, the potential to be affected by a tsunami is nil.



A seiche is a free or standing wave oscillation that occurs in a confined body of water, such as a reservoir or lake. Earthquake-generated ground waves, which have a period that matches the natural period of the lake or reservoir, may cause the water to oscillate, which can cause damage to shore line improvements. The Kings County General Plan (KCGP) indicates that earthquake-induced seiches are not considered a risk within the vicinity of the project site.

#### 4.8.1.2 Potential for Dam Failure

According to the KCGP, two major dams could cause substantial flooding in Kings County in the event of a failure: Pine Flat and Terminus Dams. The project site is located within an area of potential flooding due to dam failure of Pine Flat Dam (see Figure 9). However, the KCGP does not state the potential inundation depth in the event of failure of Pine Flat Dam. The project site is not located within potential flooding of the Terminus Dam.

#### 4.8.1.3 Flood Insurance Rate Maps

According to the Federal Emergency Management Agency (FEMA), the majority of the project site lies within a Zone X flood designation (Map Number 06031C0185C, dated June 16, 2009) indicating areas of minimal flood hazard (see Figure 8). As such, the civil designer should plan site grades accordingly.

#### 4.8.2 Expansive Soils

Expansive soils were not encountered within the borings drilled for this study. Furthermore, based on review of soil survey by the NRCS, expansive soil was not identified within the project area. Expansive soils are not anticipated within the influence of foundation systems or zone of cyclic moisture changes therefore, will not dictate the need for special grading or special footing and concrete slab-on-grade design.

#### 4.8.3 Hydrocompaction (Soil Collapse)

Our experience has found that some of the alluvial soils in the San Joaquin Valley are subject to hydrocompaction. Hydrocompactive soil has a relatively loose skeletal structure, which is weakly cemented by soluble salts or a slight clay mineral content. Moisture increase breaks down the inter-particle cementation causing a collapse of the skeletal structure. The significant loss in soil volume can result in settlement of overlying structures. The project geotechnical exploration and

associated laboratory testing identified the in-place relative density of the subsurface soil was relatively low and compression characteristics were moderate. Based on laboratory testing, post saturation of four soil samples (Borings B-3 at 1-foot, B-9 at 2 feet, B-1 at 5.5 feet, and B-7 at 7.5 feet bgs) obtained from the site had compression characteristics that were low to moderate (approx. 2.0 to 5.0 percent compression upon induction with a normal load equal to 1,000 to 2,000 psf), indicating a possibility of collapse potential.

#### 4.8.4 Corrosive Soils

Kleinfelder has completed laboratory testing to provide data regarding corrosivity of onsite soils. Our scope of services does not include corrosion engineering and, therefore, a detailed analysis of the corrosion test results is not included in this report. A qualified corrosion engineer should be retained to review the test results and design protective systems that may be required. Kleinfelder may be able to provide those services. However, the results of the laboratory testing regarding corrosivity can be seen in Section 6.7.

#### 4.8.5 Regional Subsidence

Land subsidence occurs when a large portion of land is displaced vertically, usually due to the withdrawal of groundwater, oil, or natural gas. The KCGP does not identify subsidence within Kings County; however, the KCGP acknowledges soils particularly subject to subsidence include those with high silt or clay content and a high water table. Due to the significant depth to groundwater withdraw in the San Joaquin Valley, the occurrence of subsidence is typically regional and unlikely to affect isolated locations, as such, the potential for damaging differential settlement of the proposed new structures due to subsidence is very low.

#### 4.8.6 Naturally-Occurring Asbestos

CGS Open File Report 2000-019 (Churchill and Hill, 2000) indicates the most proximal ultramafic bedrock likely to contain naturally occurring asbestos (NOA) is located approximately 35 miles east of the site. The project site is underlain by fluvial and alluvial deposits derived from Sierra Nevada and foothills which may contain small amounts of NOA. However, NOA is not likely to be a significant risk at the site.

#### 4.9 Radon Gas

Radon gas is a naturally occurring colorless, tasteless, and odorless radioactive gas that forms in soils from the decay of trace amounts of uranium that are naturally present in soils. Radon enters buildings from the surrounding soil through cracks or other openings in foundations, floors over crawlspaces, or basement walls. Once inside a building, radon can become trapped and concentrate to become a health hazard unless the building is properly ventilated to remove radon. Long-term exposure to elevated levels of radon increases one's risk of developing lung cancer.

The U.S. Environmental Protection Agency (EPA) recommends that all homes (or structures intended for human occupancy) be tested for radon whatever their geographic location. The U.S. EPA recommends that action be taken to reduce radon in structures with an average annual level higher than four picocuries per liter (4.0pCi/l).

The California Department of Health Services (2016) performed 88 tests within Kings County (last updated on February 2016) where the project site is located. Of the 88 tests, 10 reported a minimum of four (4) picocuries per liter.

The noted testing is not intended to represent the entire county area for determining which buildings have excessive indoor radon levels. In addition to geology, indoor radon levels can be influenced by local variability in factors such as soil permeability and climatic conditions, and by factors such as building design, construction, condition, and usage. Consequently, building specific radon levels can only be determined by indoor radon testing. No warranty as to actual radon levels at specific sites in Kings County is expressed or implied by the noted test results. Consideration should be given to consult a radon specialist to provide appropriate tests and recommendations to review Radon gas concerns.

## 5 EARTHWORK

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### 5.1 GENERAL

Based on the results of the various field and laboratory testing, and the geotechnical analysis conducted by Kleinfelder, it is geotechnically feasible to develop the site using conventional grading and foundation construction techniques.

### 5.2 HYDROCOMPACTION

The near surface soils to a depth of about 10 feet bgs are subject to moderate hydrocompaction. Hydrocompactive soil has a loose skeletal structure, which is weakly cemented by soluble salts and/or minor amounts of clay. Increases in soil moisture reduce the interparticle cementation (dry strength) of the soil resulting in a decrease in the volume of the soil structure. This condition can lead to post construction settlement of structures if soils subsequently become wetted.

At the present moisture content, the on-site natural soil has sufficient strength to support the proposed preliminary improvements. However, should the soil be subject to post-construction moisture increases, minor to moderate soil compression will likely occur. The amount of compression will be dependent upon imposed loads, depth of moisture increase, and the amount of moisture increase. The potential post construction settlement in building areas due to the presence of these hydrocompactive soils is anticipated to range from approximately 2.7 to 3.6 inches for strip footings supporting loads up to 5 kips per lineal foot and approximately 3.5 to 4.0 inches for column footings supporting loads up to 200 kips. These settlements include an assumed 12 inches of building pad fill above the current site grade and the bottom of footings founded at a depth of 18 inches below the assumed building pad elevation. Based on past experience and the variability of future moisture increase, the potential settlement could be totally differential over a distance of about 15 feet. The collapse potential test data indicated that most of the post construction settlement is due to overburden pressure of the existing in-place soil. Therefore, should moisture levels increase in the upper 10 feet, post construction settlement below hardscape areas (i.e. driveways, sidewalks, pavements, etc.) is anticipated to be approximately 1.8 inches due to the self-weight of the in-place soil. Most of the settlement below buildings and site improvements occurs between depths of approximately 5 and 10 feet bgs.

For preliminary purposes, it is assumed future structures may not tolerate the potential post construction settlement described above. Consequently, mitigating the potential effect of these soils will be necessary to support foundations. Over-excavation is an effective means of mitigating the potential settlement due to hydrocompaction. Excavation and recompaction of the hydrocompactive soils is recommended to a depth of 7 feet below existing grade and to a distance of at least 10 feet beyond the perimeter of the planned buildings and surrounding improvements (i.e. hardscape, planters, awnings, etc.) that could be sensitive to settlement. The perimeter of the overexcavated areas should be sloped at a gradient of 1.5:1 H:V, or flatter, to provide a transition between deep and shallow excavated areas. The recompaction depth of 7 feet may be accomplished by a combination of overexcavation and scarification depths. For example: the contractor may choose to overexcavate the soil to a depth of 5.5 feet bgs scarify the exposed soil to a depth of 18 inches, moisture condition to at, or above optimum moisture and compacted with a vibratory open hub ring compactor (e.g. Rex compactor) capable of compacting thicker lifts. If conventional sheepsfoot drum compactors are utilized, the scarified depth would need to be decreased and overexcavation depth increased to achieve the overall recompaction depth of 7 feet. The excavated soil could be used as engineered fill (refer to Section 5.4.1). With these recommendations, the post construction settlement due to hydrocompaction below structures would be reduced to approximately 1-inch.

Site improvements outside of the building envelopes described above (e.g. general hardscape, pavements, utilities, etc.) would also be subject to settlement due to hydrocompaction under the self-weight of the overburden soil and surface improvements. The total depth of overexcavation plus scarification and recompaction is 7 feet to reduce settlement below site improvements to less than 1-inch. However, the depth of earthwork to mitigate hydrocompactive soil to protect surface improvements outside of the building envelopes may be cost prohibitive. Therefore, consideration could be given to supporting these improvements on partial overexcavation and recompaction to a depth of 18 inches to provide uniform bearing support only without mitigating the potential total settlement of 1.8 inches.

With the above earthwork mitigation recommendations, controlling infiltration into the subgrade soils is very important in reducing the chance for post construction settlement. Sources of water or moisture intrusion would likely be limited to rainfall and runoff from the roof of proposed buildings, landscape irrigation, and utility leaks/failures. To aid in reducing potential saturation of subgrade soils, roof run-off is encouraged to be piped to the storm drain system and landscape irrigation be held to a minimum and use only sufficient water to sustain and promote plant growth (e.g. drip irrigation).

If site grades will be raised more than 1-foot above existing site grade, Kleinfelder should be contacted to provide further recommendations as additional over-excavation of the hydrocompactive soil below improvements may be warranted due to higher surcharge loads and greater settlement than estimated above.

If the described amount of remaining post construction settlement after overexcavation and recompaction exceeds the tolerance of structures and surface improvements or the settlement presents an adverse risk to the developer, then the hydrocompactive soils would require recompaction to a depth of 10 feet bgs.

### 5.3 SITE PREPARATION

#### 5.3.1 Stripping

At the time of the reconnaissance, the project site was covered with a moderate growth of seasonal grasses and weeds. All surface vegetation, organic material, and any miscellaneous surface obstructions (including pavement) should be removed from the project area, prior to any site grading. It is anticipated stripping of surface vegetation could involve the upper 2 to 3 inches. Surface strippings should not be incorporated into fill unless they can be sufficiently blended to result in an organic content less 3 percent by weight (ASTM D2974).

#### 5.3.2 Disturbed Soil, Undocumented Fill, and Subsurface Obstructions

Initial site grading should include a reasonable search to locate any disturbed soil, undocumented fill soils and underground structures (such as irrigation pipes) or utilities that may exist within the area of construction. Any such obstructions should be removed from the project area. Undocumented fill or loose soil should be excavated and may be reused provided it meets the applicable requirements for engineered fill (see Section 5.4). Any disturbed soil, pockets of soft or loose soils, void spaces created by burrowing animals or undocumented fill, which are encountered, should be excavated to expose firm native material.

At the time of the investigation, loose sediments within Peoples Ditch was probed to a depth of approximately 2 to 2.5 feet below the ditch bottom. All vegetation, soft sediments, organic material, and debris should be removed from the ditch profile and bottom to expose firm unyielding

soil conditions. The exposed subgrade should be approved prior to placement of pipe bedding and or pipeline construction.

### 5.3.3 Over-excavation and Scarification

Over-excavation is typically reserved for soils that, in their natural state, will not provide adequate bearing for structures. The native soils are hydrocomapactive and could lead to non-uniform bearing conditions and differential settlement of the proposed building improvements. Therefore, mitigation by over-excavation and recompaction is recommended to mitigate potential post construction settlement below structures and site improvements. The perimeter of overexcavated areas should be sloped and benched to receive fill in accordance with Section 5.4.2.

The recompaction depths discussed below may be accomplished by a combination of overexcavation, scarification, and recompaction. The depth of scarification and recompaction is dependent on the ability of the equipment to successfully moisture condition and compact the scarified zone and may be adjusted buy the contractor for compatibility of the equipment provided the overall re compaction depth specified is met.

Note that the overexcavation and scarification depths described herein are minimum depths. If additional depths of earthwork are specified in the Project Plans and Specifications or by the developer, the contractor shall perform the required overexcavation and recompaction to meet the more stringent requirements.

#### *Building Envelope*

After performing removals described in Sections 5.3.1 and 5.3.2, the planned buildings and surrounding improvements (i.e. hardscape, planters, awnings, etc.) that are sensitive to settlement should be over-excavated to a minimum depth of 5.5 feet bgs. The bottom of the excavation should be scarified to a depth of 18 inches, moisture conditioned, and recompacted as described in Section 5.4. The lateral limits of the over-excavation should include the building area and extend at least 10 feet beyond the perimeter of the outer lines of the foundations and surrounding improvements (i.e. hardscape, planters, awnings, etc.). The excavated soil may be reused as engineered fill when placed, moisture conditioned, and compacted as described in Section 5.4.



## *Outside Building Envelope*

After performing removals described in Sections 5.3.1 and 5.3.2, site improvements outside the building envelope described in Section 5.2 Hydrocompaction, areas to receive surface improvements (e.g. general hardscape, pavements, utilities, etc.) should be over-excavated to a depth of 1-foot bgs. The bottom of the excavation should be scarified to a depth of 6 inches, moisture conditioned, and recompact as described in Section 5.4. The lateral limits of the over-excavation in planned foundation areas should include the surface improvements area and extend at least 3 feet beyond the perimeter of improvements. The excavated soil may be reused as engineered fill when placed, moisture conditioned, and compacted as described in Section 5.4.

## 5.4 ENGINEERED FILL

### 5.4.1 Materials

All engineered fill soils should be nearly free of organic or other deleterious debris and less than 3 inches in maximum dimension. The native soil materials, exclusive of debris, may be used as engineered fill provided they contain less than 3 percent organics by weight (ASTM D2974).

Recommended requirements for any imported soil to be used as engineered fill, as well as applicable test procedures to verify material suitability, are provided on Table 5.4-1.

**Table 5.4-1  
Soil Materials Test Procedures**

| Gradation               |                         | Test Procedures   |                       |
|-------------------------|-------------------------|-------------------|-----------------------|
| Sieve Size              | Percent Passing         | ASTM <sup>1</sup> | Caltrans <sup>2</sup> |
| 76 mm (3 inch)          | 100                     | C136              | 202                   |
| 19 mm (¾ inch)          | 80 – 100                | C136              | 202                   |
| No. 4                   | 70 – 100                | C136              | 202                   |
| No. 200                 | 20 – 70                 | C136              | 202                   |
| <u>Plasticity</u>       |                         |                   |                       |
| <u>Liquid Limit</u>     | <u>Plasticity Index</u> |                   |                       |
| < 25                    | < 12                    | D4318             | 204                   |
| <u>Expansion Index</u>  |                         |                   |                       |
| < 20                    |                         | D4829             | -                     |
| <u>Soluble Sulfates</u> |                         |                   |                       |
| < 2000 ppm              |                         | -                 | 417                   |
| <u>Soluble Chloride</u> |                         |                   |                       |
| <300 ppm                |                         | -                 | 422                   |
| <u>Resistivity</u>      |                         |                   |                       |
| >1000 ohm-cm            |                         | -                 | 532                   |

Notes:

<sup>1</sup> American Society for Testing and Materials Standards (latest edition)

<sup>2</sup> State of California, Department of Transportation, Standard Test Methods (latest edition)

Any imported fill materials to be used for engineered fill should be sampled and tested by a representative of the project Geotechnical Engineer prior to being transported to the site.

#### 5.4.2 Benching

Where fill will be placed on slopes steeper than 5:1 (H:V), it will be necessary to bench the slope to receive fill as successive filling operations are performed. Benches should be constructed approximately every 1.5 feet (slope height less than 5 feet) or every 2.5 feet (slope height greater than 5 feet) of vertical fill thickness. Benching should begin at one bench height above the toe of the slope. Where fill will be placed in small pits or excavations, benching is not required, however, all loose soil should be removed from the invert and sides and the area made dish-shaped to

receive fill. Any loose soil excavated during site preparation may be used as fill, provided it meets the requirement for engineered fill.

Compaction equipment should provide kneading effort (e.g. with sheeps foot rollers) to enhance uniformity and minimize stratification.

#### 5.4.3 Compaction Criteria

Soils used for engineered fill should be uniformly moisture conditioned to at, or above optimum moisture, placed in horizontal lifts less than 8 inches in loose thickness, and compacted to at least 90% relative compaction. Disking and/or blending may be required to uniformly moisture-condition soils used for engineered fill. The specified compaction shall be increased to at least 95% relative compaction in the top 12 inches of the subgrade soil in pavement areas as indicated in Section 6.5, Pavements.

#### 5.4.4 Construction Considerations

Should site grading be performed during or subsequent to wet weather, near-surface site soils may be significantly above optimum moisture content. These conditions could hamper equipment maneuverability and efforts to compact site soils to the recommended compaction criteria. Disking to aerate, chemical treatment, replacement with drier material, stabilization with a geotextile fabric or grid, or other methods may be required to mitigate the effects of excessive soil moisture and facilitate earthwork operations. Any consideration of chemical treatment (e.g. lime) to facilitate construction would require additional soil chemistry evaluation and could affect landscape areas and some construction materials (e.g. aluminum).

If construction is performed during dry, hot or windy weather, it may be necessary to periodically apply surface watering to counter evaporative loss or re-establish moisture prior to constructing slabs (see Section 6.3.1).

## 5.5 TEMPORARY EXCAVATIONS

### 5.5.1 General

All excavations must comply with applicable local, State, and Federal safety regulations including the current OSHA Excavation and Trench Safety Standards. Construction site safety is generally the responsibility of the contractor, who shall also be solely

responsible for the means, methods, and sequencing of construction operations. The information below is provided as a service to the client. Under no circumstances should the information provided be interpreted to mean that Kleinfelder is assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred.

### 5.5.2 Excavations and Slopes

The contractor should be aware that slope height, slope inclination, or excavation depths (including utility trench excavations) should in no case exceed those specified in local, State, and/or Federal safety regulations (e.g., OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926, or successor regulations). Such regulations are strictly enforced and, if they are not followed, the owner, contractor, and/or earthwork and utility subcontractors could be liable for substantial penalties.

All excavations should be constructed and maintained in conformance with current OSHA requirements (29 CFR Part 1926). The on-site soils are best represented by OSHA Type C soil.

### 5.5.3 Construction Considerations

Heavy construction equipment, building materials, excavated soil, and vehicular traffic should be kept sufficiently away from the top of any excavation to prevent any unanticipated surcharging. If it is necessary to encroach upon the top of an excavation, Kleinfelder can provide comments on slope gradients or loads on shoring to address surcharging, if provided with the geometry. Shoring, bracing, or underpinning required for the project (if any), should be designed by a professional engineer registered in the State of California.

During wet weather, earthen berms or other methods should be used to prevent runoff water from entering all excavations. All runoff should be collected and disposed of outside the construction limits.

## 5.6 PIPELINE AND TRENCH BACKFILL

### 5.6.1 Materials

Pipe embedment zone backfill (i.e., bedding, haunching, pipe zone and initial backfill per ASTM D2321) should consist of soil compatible with design requirements for the specific types of pipes. It is recommended the project designer or pipe supplier develop the final material specifications based on planned pipe types, bedding conditions, tolerable deflection and other factors beyond the scope of this study. Randomly excavated on-site soil from the predominate site profile will likely be a combination of Class III and IVa material per ASTM D2321.

With respect to the design of the Peoples Ditch pipeline, Kleinfelder recommends a minimum Type 2 installation and use of select bedding and haunching material consisting of Category II (GM, SM, GC, and SC with less than 20 percent passing the #200 sieve). The thickness of the bedding (inches) should be based on the outer diameter  $D_o/24$ .<sup>1</sup>

Trench zone backfill (i.e., material placed between the pipe zone backfill and finished subgrade) may consist of native soil that meets the requirements for engineered fill.

### 5.6.2 Compaction Criteria

All trench backfill should be placed and compacted in accordance with recommendations provided above for engineered fill. Reduced compaction (85% minimum) could be specified for trench zone backfill in non-structural areas. Mechanical compaction is recommended; ponding or jetting should not be used.

Table 5.6-1 provides estimated geotechnical parameters for designers to consider in evaluating pipe zone backfill criteria that is compatible with pipe types and deformation tolerances.

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<sup>1</sup> *Concrete Pipe Design Manual, American Concrete Pipe Association*

**Table 5.6-1  
Pipe Zone Backfill Parameters**

| Soil Stiffness Modulus (psi)                    |                                  |                           | Backfill Density (pcf)    |                           |
|-------------------------------------------------|----------------------------------|---------------------------|---------------------------|---------------------------|
| <b>E'<sub>n</sub><br/>(Trench<br/>Sidewall)</b> | <b>E'<sub>b</sub> (Backfill)</b> |                           | <b>85%<br/>Compaction</b> | <b>90%<br/>Compaction</b> |
|                                                 | <b>85%<br/>Compaction</b>        | <b>90%<br/>Compaction</b> |                           |                           |
| 3000                                            | 900                              | 1350                      | 118                       | 125                       |

E'<sub>n</sub> represents the modulus for the undisturbed natural soil and is based on relative density data by Howard (1996). E'<sub>b</sub> is the modulus for backfill derived from random excavation of on-site soil and is based on data by Hartley and Duncan (1982) and Watkins and Anderson (2000). The design E' will be dependent upon the pipe diameter and trench width, which dictates the relative influence of E'<sub>n</sub> and E'<sub>b</sub>. Methods by Howard (1996) are suggested for evaluating the design E'. Kleinfelder can furnish a recommended design E', if provided with pipe diameter and specifications for trench construction.

In evaluating the maximum load (W<sub>d</sub>) on pipes, a kμ' (k=0.31 and μ'=0.62) of 0.19 can be used in determining the load coefficient factor C<sub>d</sub>.

### 5.6.3 Pipeline Thrust

The lateral thrust on pipelines can be resisted by friction between the pipe and native or imported backfill soil and lateral bearing on thrust blocks. The allowable frictional resistance between the pipe and backfill comprised of on-site soil or select import sand backfill is provided in Table 5.6-2.

**Table 5.6-2  
Frictional Coefficients**

| <b>Pipe Material</b>                                            | <b>Allowable Frictional Coefficient</b> |                     |
|-----------------------------------------------------------------|-----------------------------------------|---------------------|
|                                                                 | <b>Sustained Loading</b>                | <b>Test Loading</b> |
| Smooth Plastic or Steel (native soil or imported sand backfill) | 0.19                                    | 0.23                |

The lateral load on shallow thrust blocks (block height greater than 70 percent of depth to center of pipeline) poured against undisturbed soil can be resisted by the passive lateral bearing provided in Table 6.1-3. The estimated horizontal deflection in Table 6.1-3 would also be applicable to shallow thrust blocks.

## 5.7 ESTIMATED VOLUME LOSS

Based on the in-place densities obtained from the test borings and the Modified Proctor tests, it is estimated the volume loss from cut to fill in the upper 5 feet across the proposed project area may range from about 5 percent to 22 percent, depending on the relative compaction achieved. Table 5.7-1 provides the estimated volume loss due to recompaction of the near surface soils of the site to relative compaction levels of 90 and 95 percent for engineered fill below improvement areas.

The volume loss associated with recompaction was based on an average maximum dry density of 123 lbs/ft<sup>3</sup> and an average compaction during construction of 2 percent above the required compaction levels of 90 and 95 percent. The estimated volume loss considers the in-place density in the upper 5 feet of the site soils. Volume loss within the deeper portions of the proposed improvements are anticipated to equal, or less.

**Table 5.7-1  
Average Volume Loss**

| Depth (ft) | Average Volume Loss |                |
|------------|---------------------|----------------|
|            | 92% Compaction      | 97% Compaction |
| 0 – 5      | 12.5                | 17.0           |

The calculations for developing estimates of an earthwork factor are based on very limited data, and caution should be exercised in the application of this factor in cost estimating and volume calculations. The volume of material tested for in-place density is commonly as small as one ten-thousandth of one percent of the total volume of material to be excavated. Subjective assumptions must be made to perform the calculations, which can affect the accuracy of the results. These include the anticipated relative compaction of the material when placed as fill and uniformity of the materials. In addition, the volume loss estimates in Table 5.7-1 are based only on undisturbed density tests and two (2) Modified Proctor tests and do not consider other forms of loss (e.g. stripping, grubbing, spillage, wastage, or subsidence), which can be substantial.



## 6 DESIGN RECOMMENDATIONS

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### 6.1 SPREAD FOUNDATIONS

#### 6.1.1 General

The proposed structures may be supported by conventional shallow footings supported on approved properly engineered fill. The following preliminary recommendations are based on the assumption that the recommendations in Section 5, "Earthwork", have been implemented. Recommendations regarding the geotechnical aspects of building design are presented below.

#### 6.1.2 Allowable Vertical Bearing Pressures and Settlements

Generally, two geotechnical issues determine the design bearing pressure for conventional spread footing foundations: (1) strength of the foundation soil and (2) tolerable settlement. The on-site soil in its current condition has enough strength to support the proposed improvements. However, due to the hydrocompactive soils present at the site, the available bearing capacity should be limited to reduce the anticipated settlement of the proposed improvements. Table 6.1-1 provides the net allowable bearing pressures for use in foundation design.

**Table 6.1-1**  
**Available Allowable Bearing**

|                             | Available Allowable Bearing (psf) |
|-----------------------------|-----------------------------------|
| Static Loading              | 1500                              |
| Total Combined Loading      | 3000                              |
| Unfactored Ultimate Bearing | 4000                              |

The above values are appropriated for design using the Basic and Alternate Load Combinations in Section 1605.3 of the 2019 CBC.

Analysis, based on Schmertmann, determined the following estimate static settlement based on a range of assumed structural loads. The settlement assumes the sustained load on the footings is equal to 80 percent of the net bearing pressure. Settlement is expected to occur primarily throughout the construction process.

**Table 6.1-2**  
**Estimated Settlement**

| <b>Footing Type</b> | <b>Loading<br/>(DL +LL)</b> | <b>Estimated Settlement<br/>(inch)</b> |
|---------------------|-----------------------------|----------------------------------------|
| Strip               | To 5.0 kip/ft               | Less than 0.25                         |
| Square              | 50 kips                     | Less than 0.25                         |
|                     | 100 kips                    | 0.50                                   |
|                     | 200 kips                    | 0.85                                   |

The differential settlement between similarly loaded footings would equal approximately half of the anticipated settlement represented in Table 6.1-2. The post construction settlement due to hydrocompaction if the soils subsequently become saturated would be differential over a distance of approximately 15 feet. Therefore, the total differential settlement between foundations would be the sum of the differential settlement between footings from Table 6.1-2 plus the differential settlement due to hydrocompaction after earthwork mitigation discussed in Section 5.2.

If deemed necessary by the design engineer, Kleinfelder can provide the estimated settlement for other loading conditions. The design bearing pressures are net values so the weight of embedded concrete does not need to be included in the foundation loading.

A modulus of subgrade reaction,  $K_1$  ( $B_p = 1$  foot), of 315 pci can be used for undisturbed on-site soil and 315 pci can be used for engineered fill. If the fill thickness is less than 2 feet, a composite  $K_1$ , could be evaluated. It should be noted the subgrade modulus reflects the response of the subgrade under primarily elastic conditions and small deflections. It is not a characteristic intended to define soil compressibility (settlement) or load-bearing capacity.

### 6.1.3 Lateral Resistance

Lateral loads applied to foundations can be resisted by a combination of lateral bearing and frictional resistance. The allowable lateral bearing and frictional coefficient for the foundations are presented in Table 6.1-3.

**Table 6.1-3**  
**Passive Pressures and Frictional Coefficients**

|                                                        | Allowable |                | Ultimate |
|--------------------------------------------------------|-----------|----------------|----------|
|                                                        | Static    | Total Combined |          |
| Frictional Coefficient                                 | 0.42      | 0.50           | 0.62     |
| Passive Pressure (psf/ft of depth)                     | 290       | 387            | 580      |
| Lateral Translation Needed to Develop Passive Pressure | 0.003D    | 0.006D         | 0.018D   |

Note: D is the footing depth

If the deflection resulting from the strain necessary to develop the passive pressure is with structural tolerance, the passive pressure and frictional resistance can be used in combination. Otherwise, additional passive pressure values could be provided based on tolerable deflection. The allowable values already incorporate a factor of safety and, as such, would be compared directly to the driving loads. If analytical approaches require the input of a safety factor, the ultimate values would be used.

## 6.2 EARTH RETAINING STRUCTURES

The lateral earth pressure against retaining structures will be dependent upon the ability of the wall to deflect. Presented in Table 6.2-1 is the active, at-rest and braced lateral earth pressure for level on-site soil. The active pressure is applicable to walls able to translate to 0.0005 radians at the top or bottom. The at-rest soil pressure is applicable to retaining structures that are fully fixed against both rotation and translation. Walls restrained from translation at the top and bottom, but able to deflect 0.0005 radian between restrained points should be designed for the braced lateral pressure. The at-rest pressures are applicable to walls fully fixed against translation or rotation. The at-rest pressures include the Jaky solution for normally consolidated soil plus consideration for the locked-in pressure associated with the pre-stressing due to backfill compaction (over-consolidation).

**Table 6.2-1**  
**Lateral Earth Pressure**

| Loading Conditions                 | Lateral Earth Pressures |
|------------------------------------|-------------------------|
| Active Pressure (psf/ft of depth)  | 38                      |
| Braced Pressure (psf)              | 25 H                    |
| At-Rest Pressure (psf/ft of depth) | 84                      |

H in the expression represents the retained height in feet (measured from finished grade to bottom of footing). The earth pressures presented above assume saturated conditions. The earth pressures do not include hydrostatic pressures; therefore, wall should be adequately drained to prevent the build-up of hydrostatic pressure.

Retaining wall foundation design can utilize the passive pressures and sliding resistance given in Table 6.1-3 and allowable bearing capacity given in Section 6.1-1. When utilizing the available allowable bearing capacities of Table 6.1-1, the value for static loading would represent the average bearing for the footing and the value for total combined loading would represent the allowable maximum toe pressure.

### 6.3 CONCRETE SLABS-ON-GRADE

#### 6.3.1 Subgrade Preparation

Any building slabs-on-grade should be supported on engineered fill placed as described in Section 5 of this report. The slab subgrade, to a depth of 12 inches, should have a moisture content of at least optimum immediately prior to pouring the slab or placing a vapor retarding membrane.

#### 6.3.2 Capillary and Moisture/Vapor Break

Considering the soil type and regional groundwater depth, a capillary break (i.e. clean sand or gravel layer) is not necessary.

If the building contains component which might be adversely affected by moisture, it is recommended that the slab subgrade be covered by vapor retarding membrane, such as 10-mil polyorfin. If design should incorporate a gravel subgrade layer, the membrane should have a minimum thickness of 15-mil. The subgrade surface should be smooth and care should be exercised to avoid tearing, ripping, or otherwise puncturing the vapor retarding membrane. If the vapor retarding membrane becomes torn or disturbed, it should be removed and replaced or properly patched. It is recommended consideration be given to placing concrete directly on the vapor retarding membrane. If desired by designers, the vapor retarding membrane could be covered with approximately 1 to 2 inches of saturated surface dry (SSD), relatively clean sand to protect it during construction. Concrete should not be placed if sand overlying the vapor barrier

has been allowed to attain a moisture content greater than about 5% (due to precipitation or excessive moistening). Excessive water beneath interior floor slabs could result in future significant vapor transmission through the slab, adversely affecting moisture-sensitive floor coverings and the indoor environment.

It should be noted that, although the slab support discussed above is currently the industry standard, this system might not be completely effective in preventing floor slab moisture vapor transmission problems. This system will not necessarily assure that floor slab moisture transmission rates will meet floor-covering manufacturer standards and that indoor humidity levels will not inhibit mold growth. A qualified specialist(s) with knowledge of slab moisture protection systems, flooring design and other potential components that may be influenced by moisture, should address these post-construction conditions separately. The purpose of a geotechnical study is to address subgrade conditions only, and consequently, it does not evaluate future potential conditions.

### 6.3.3 Conventional Slab Design

There are no geotechnical considerations (e.g. expansive soil), which would require special design of slabs. Therefore, the thickness and reinforcement of slabs-on-grade should be determined by structural considerations and should be designed by the project structural engineer or building designer. A modulus of subgrade reaction,  $K_1$  ( $B_p = 1$  foot), of 315 pci may be used for elastic analysis of slabs on at least 8 inches of properly compacted native or similar soil.

Slab concrete should have good density, a low water/cement ratio, and proper curing to promote a low porosity. It is recommended the water/cement ratio not exceed 0.45 to minimize vapor transfer.

Consideration should be given to construction/control joint spacing and/or some form of reinforcement of exterior slabs to aid in crack control.

## 6.4 PIER/POLE FOUNDATIONS

### 6.4.1 Allowable Vertical Axial Capacity and Settlement

Structures such as light poles, signs, canopies, etc., can be supported by pier/pole foundations. Should design incorporate the use of pier/pole foundations, Table 6.4-1 provides expressions for

the allowable and ultimate axial capacity using friction to resist axial loads. If the design of the pier/pole foundations includes end bearing to resist axial loads, the design may utilize the bearing capacity expressions given in Table 6.2-1, up to an allowable bearing capacity of 1,500 psf for static loading (D.L. + long term L.L.). The end bearing capacity may be increased 50 percent for total combined loading (D.L. + L.L. + transient loading, such as wind or seismic).

**Table 6.4-1**  
**Allowable Axial Capacity**

|                              | Frictional Resistance for Vertical Loads in Compression (lbs) |
|------------------------------|---------------------------------------------------------------|
| Static Loading               | 50 $DL^2$                                                     |
| Total Combined Loading       | 65 $DL^2$                                                     |
| Unfactored Ultimate Capacity | 100 $DL^2$                                                    |

Note: 1) D is pier diameter in feet and L is embedment length in feet.  
2) The allowable uplift resistance would be 70 percent of the compressional resistance.

The total settlement of friction piers designed in accordance with the above recommendations should be less than 0.002 times the pier diameter in inches. If design incorporates end bearing to resist axial loading, the estimated settlement would increase to approximately 0.018 times the pier diameter in inches. The concrete mix and reinforcement for drilled pier/caisson foundations should be designed by the project structural engineer.

#### 6.4.2 Lateral Resistance

Methods by ASHTO and Caltrans can be used to evaluate the lateral capacity of pier footings. The allowable passive pressure to resist lateral loads on isolated piers for use in these methods may be taken as 510 psf per foot of depth of embedment. The passive pressure may be increased by one-third for the total combined loads, including wind and seismic. The passive pressure values already consider arching and, as such, should not be increased further.

The allowable passive pressure provided above would not be appropriate for use in place of the values given in Table No. 1806.2 of the 2019 California Building Code (CBC) if pier foundation design utilizes the pole formulas in the CBC. If design uses the pole formulas in the CBC, the appropriate class of material in Table 1806.2 would be No. 4 (Silty Sand). Based on the strength of the on-site soils, a lateral bearing pressure of 170 psf/ft of embedment below the site grade may be used in place of the value given in Table 1806.2.

The passive pressure only considers soil strength. Tolerable pier deflection may govern the design lateral resistance. If provided with pier geometry, lateral load, and loading eccentricity, Kleinfelder can provide the estimated pier head deflection.

#### 6.4.3 Design and Construction Considerations

Prior to placing steel or concrete, footing excavations should be cleaned of all debris, loose or soft soil, and water. All footing excavations should be observed by the project Geotechnical Engineer just prior to placing steel or concrete. The purpose of these observations is to check that the bearing soils actually encountered in the foundation excavations are similar to those assumed in analysis and to verify the recommendations contained herein are implemented during construction.

### 6.5 PAVEMENT DESIGN

#### 6.5.1 General

The subgrade R-value for the on-site soil was evaluated in the laboratory on seven (7) near surface soil samples taken throughout the project site. The locations of the tested R-values were chosen in areas of proposed pavements based on a preliminary site plan. The laboratory tests were performed in conformance to Caltrans Test Method 301 and were evaluated based on stabilometer and expansion dial readings. The soil tested revealed that expansion pressure generally governs the design R-value. The R-value test results included in Appendix B indicate the R-value by exudation and includes the expansion pressures. The design R-value is dictated by expansion pressure and Traffic Index (TI). Consequently, the design R-value varies with Traffic Index.

Detailed vehicular load and frequency information is not available for the on-site pavements. Traffic within the project site is anticipated to consist of access for automobiles, trash collection, and delivery truck traffic. Consequently, a range of pavement sections have been provided for the on-site based on Traffic Indexes (T.I.'s) of 4.5 through 8.0. These traffic design assumptions should be reviewed for compatibility with the actual development, and revised pavement sections developed, as necessary.



## 6.5.2 Flexible Pavement

The preliminary flexible pavement design recommendations presented below are based upon the California Department of Transportation (Caltrans) design procedures. The flexible asphalt concrete pavement sections associated with the assumed T.I.'s and design R-value for on-site asphalt pavements are summarized in Table 6.5-1.

**Table 6.5-1  
Recommended Minimum Pavement Sections**

| <b>Traffic Index</b> | <b>Design R-Value (Expansion)</b> | <b>Asphalt Concrete</b> | <b>Aggregate Base (Min. R-value: 78)</b> | <b>Aggregate Subbase (Min. R-value: 50)</b> |
|----------------------|-----------------------------------|-------------------------|------------------------------------------|---------------------------------------------|
| 4.5                  | 11                                | 2.5"                    | 8.5"<br>2.0"                             | -<br>7.0"                                   |
| 5                    | 12                                | 3.0"                    | 8.5"<br>2.0"                             | -<br>7.0"                                   |
| 5.5                  | 13                                | 3.0"                    | 10.5"<br>3.0"                            | -<br>8.0"                                   |
| 6.0                  | 14                                | 3.5"                    | 11.0"<br>3.5"                            | -<br>8.0"                                   |
| 6.5                  | 16                                | 4.0"                    | 11.5"<br>3.5"                            | -<br>8.5"                                   |
| 7.0                  | 17                                | 4.0"                    | 12.5"<br>4.5"                            | -<br>9.0"                                   |
| 7.5                  | 18                                | 4.5"                    | 13.0"<br>5.0"                            | -<br>9.0"                                   |
| 8.0                  | 19                                | 5.0"                    | 13.5"<br>5.0"                            | -<br>9.5"                                   |

The design criteria assume a 20-year design period and that normal maintenance (crack sealing, etc.) is performed. The traffic index is a measure of the volume of truck traffic that will be applied to a pavement section in the design life. The allowable average daily truck traffic (ADTT) for the assumed traffic indexes is presented in Table 6.5-2.

**Table 6.5-2  
Average Daily Truck Traffic**

| <b>Traffic Index</b> | <b>2-Axle Vehicle</b> | <b>or</b> | <b>3-Axle Vehicle</b> | <b>or</b> | <b>5-Axle Vehicle</b> |
|----------------------|-----------------------|-----------|-----------------------|-----------|-----------------------|
| 4.5                  | 2.2                   |           | 0.8                   |           | 0.2                   |
| 5.0                  | 5.2                   |           | 2.0                   |           | 0.5                   |
| 5.5                  | 11.6                  |           | 4.3                   |           | 1.1                   |
| 6.0                  | 24.1                  |           | 9.0                   |           | 2.4                   |
| 6.5                  | 47.3                  |           | 17.7                  |           | 4.7                   |
| 7.0                  | 88.1                  |           | 33.0                  |           | 8.8                   |
| 7.5                  | 157.3                 |           | 59.0                  |           | 15.8                  |
| 8.0                  | 270.6                 |           | 101.5                 |           | 27.1                  |

The flexible pavement should conform to, and be placed in accordance with, Caltrans Standard Specification (2019). The aggregate base (Class 2) should comply with Section 26 of the Caltrans Standard Specifications. The aggregate subbase (Class 2) should comply with the specifications in Section 25. The aggregate base, aggregate subbase, and upper 12 inches of subgrade should be compacted to 95 percent relative compaction as determined by Caltrans Test Method No. 216 (dry weight comparison) or ASTM D1557 test procedures. The upper 12 inches of pavement subgrade should be moisture conditioned to at, or above optimum moisture content.

### 6.5.3 Moisture Considerations

The pavement design should consider both the vehicular loading, as well as the environmental factors. The vehicular loading will depend on the amount and type of traffic anticipated for the pavement design life. Environmental factors include the potential for moisture variations beneath the pavement structural section. It is recommended that all pavement areas conform to the following criteria:

- All trench backfill should be properly placed and adequately compacted to provide a stable subgrade.
- Adequate drainage should be provided to prevent ponding of surface water which could saturate the subgrade soil.

- A periodic maintenance program should be incorporated to include sealing cracks and other measures.
- Any concrete curbs and gutters should extend to the subgrade.

#### 6.5.4 Construction Considerations

In the event unstable (pumping) subgrades are encountered within planned pavement areas, it is recommended a heavy, rubber-tired vehicle (typically a loaded water truck) be used to test the load/deflection characteristics of the finished subgrade materials. It is recommended this vehicle have a minimum rear axle load (at the time of testing) of 16,000 pounds with tires inflated to at least 65 psi pressure. If the tested surface shows a visible deflection extending more than 6 inches from the wheel track at the time of loading, or a visible crack remains after loading, corrective measures should be implemented. Such measures could include disking to aerate, chemical treatment, replacement with drier material, or other methods. It is recommended Kleinfelder be retained to assist in developing which method (or methods) would be applicable for this project.

#### 6.5.5 Construction Observation and Testing

It is recommended that all earthwork during construction be monitored by a representative from Kleinfelder, including site preparation, placement of all engineered fill and trench backfill, construction of slab and pavement subgrades. The purpose of these services would be to provide Kleinfelder the opportunity to observe the soil conditions encountered during construction, evaluate the applicability of the recommendations presented in this report to the soil conditions encountered, and recommend appropriate changes in design or construction procedures if conditions differ from those described herein.

### 6.6 CORROSION POTENTIAL

Kleinfelder has completed laboratory testing to provide data regarding corrosivity of onsite soils. Our scope of services does not include corrosion engineering and, therefore, a detailed analysis of the corrosion test results is not included in this report. A qualified corrosion engineer should be retained to review the test results and design protective systems that may be required. Kleinfelder may be able to provide those services.

Laboratory chloride concentration, sulfate concentration, pH, and electrical resistivity tests were performed on near-surface composite soil samples from the upper 3 feet of Boring B-6 and B-7. The results of the tests are summarized in Table 6.6-1. If fill materials will be imported to the project site, similar corrosion potential laboratory testing should be completed on the imported material.

**Table 6.6-1  
Soil Corrosion Potential Laboratory Test Results**

| Boring | Depth, Feet | Material   | Minimum Resistivity, ohm-cm | pH   | Water-Soluble Ion Concentration, ppm |         |
|--------|-------------|------------|-----------------------------|------|--------------------------------------|---------|
|        |             |            |                             |      | Chloride                             | Sulfate |
| B-6    | 0 to 3      | Silty Sand | 24,900                      | 7.32 | 3.9                                  | 0.2     |
| B-7    | 0 to 3      | Sandy Silt | 17,400                      | 7.77 | 30.7                                 | 37.5    |

The following summary is provided with respect to the results presented in Table 6.7-1 and applicable references. Not that the 2019 CBC refers to ACI 318, Section 4.2, for corrosion exposure potential for concrete in contact with soils.

- The measured saturated minimum resistivity values indicates the soil is “moderately corrosive” to buried ferrous metals. These correlations are based on Corrosion Basics, 2<sup>nd</sup> edition, Roberge, 2006.
- A water-soluble chloride content of less than 500 ppm is generally considered non-corrosive to reinforced concrete. The samples tested had 3.9 and 30.7 ppm soluble Chloride contents. According to the American Concrete Institute (ACI) 318-08, Table 4.2.1, the Exposure Severity and Class for corrosion protection of reinforcement are “Not Applicable” and “C0” if the concrete is dry or protected from moisture, and “Moderate” and “C1” if the concrete is exposed to moisture but not to external sources of chlorides. For both classes, concrete should have a minimum compressive strength of 2,500 psi and there is no restriction on the maximum water cement ratio used. If concrete is exposed to moisture and an external source of chlorides, the Exposure Severity and Class for corrosion protection of reinforcement are “Severe” and “C2”. For C2 or Severe conditions concrete should have a minimum compressive strength of 5,000 psi and a maximum water cement ratio of 0.40.

- According to the American Concrete Institute (ACI) 318-08, Table 4.2.1, the Exposure Severity is “not applicable” and the Exposure Class is “S0” for soils with a water soluble sulfate content of less than 1,000 ppm. According to Table 4.3.1 of ACI 318-08, for an Exposure Class of “S0”, there is no specification for maximum water cement ratio, and concrete should have a minimum compressive strength of 2,500 psi.

The provided preliminary corrosion tests are only an indicator of potential soil corrosivity for the sample tested. Kleinfelder’s scope of work did not include corrosion engineering. If more detailed information is required, it is recommended a competent corrosion engineer be retained to evaluate the corrosion potential of the site to proposed improvements, to recommend further testing as required, and to provide specific corrosion mitigation methods appropriate for the project.

## 6.7 SITE DRAINAGE

### 6.7.1 General

It is important that drainage away from the improvements be provided to prevent ponding and/or saturation of the soils in the vicinity of foundations, concrete slabs-on-grade, or pavements. Poor surface drainage could cause reduced subgrade support. The site should be graded to carry surface water away from the improvements and convey it to proper discharge points. Proper drainage needs to be a partnering between design and maintenance of the facility.

The development should incorporate the basis for good drainage. This includes:

- Sufficient pad height to allow for proper drainage.
- Defined drainage gradients away from the structures to points of conveyance, such as drainage swales and/or area drains and discharge pipe.
- Roof downspouts connected to proper areas of discharge.

The maintenance personnel must maintain the established drainage by not blocking or obstructing gradients away from structures without providing some alternative drainage means (e.g. area drains and subsurface pipes). If planter areas are established near the structures, it is important to prevent surface run-off from entering the planter. Where planted areas are adjacent to the structures, care must be taken not to over irrigate and to maintain a leak-free sprinkler piping

system. Consideration should be given to use of low volume emitter irrigation systems for planters. Well-maintained low-volume emitter irrigation (drip system) is best suited for planters adjacent to structures. Watering practices must strive to use only sufficient water to sustain and promote plant growth.

#### 6.7.2 On-Site Infiltration Basin

The proposed infiltration basin to be located on the east end of the site may be a source of moisture infiltration that could trigger hydrocompaction of the foundation soils and subsequent settlement. As such, if the hydrocompactive soils are to remain without recompaction to minimize post construction settlement due to hydrocompaction, then it is recommended that the pond design incorporate dry wells to direct and infiltrate storm water at a depth below 10 feet from the existing site grade.

## 7 ADDITIONAL SERVICES

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### 7.1 ADDITIONAL ENGINEERING INVESTIGATIONS

As the planning evolves to conceptual and eventual design, detailed design-level Geotechnical Investigation Report(s) and additional soil borings should be conducted that are site specific and address the loading conditions and development schemes for the final designs.

### 7.2 PLANS AND SPECIFICATIONS REVIEW

It is recommended Kleinfelder conduct a general review of plans and specifications to evaluate that the earthwork and foundation recommendations have been properly interpreted and implemented during design. In the event Kleinfelder is not retained to perform this recommended review, no responsibility will be assumed for misinterpretation of the recommendations.

### 7.3 CONSTRUCTION OBSERVATION AND TESTING

It is recommended that all earthwork during construction be monitored by a representative from Kleinfelder, including site preparation, placement of all engineered fill and trench backfill, construction of slab and pavement subgrades, and all foundation excavations. The purpose of these services would be to provide Kleinfelder the opportunity to observe the soil conditions encountered during construction, evaluate the applicability of the recommendations presented in this report to the soil conditions encountered, and recommend appropriate changes in design or construction procedures if conditions differ from those described herein.



## 8 LIMITATIONS

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Recommendations contained in this report are based on the field observations and subsurface explorations, laboratory tests, and present knowledge of the proposed construction. It is possible that soil conditions could vary between or beyond the points explored. If soil conditions are encountered during construction that differ from those described herein, Kleinfelder should be notified immediately in order that a review may be made and any supplemental recommendations provided. If the scope of the proposed construction changes from that described in this report, the recommendations provided should also be reviewed.

This report has been prepared in substantial accordance with the generally accepted geotechnical engineering practice, as it exists in the general area at the time of the study. No warranty or guarantee, express or implied, is intended or provided. The recommendations provided in this report are based on the assumption that Kleinfelder will conduct an adequate program of tests and observations during the construction phase in order to evaluate compliance with the recommendations.

This report may be used only by the Epic Management Group, Inc. and their designated representatives for the purposes stated, within a reasonable time from its issuance, but in no event later than one year (without review) from the date of the report. Land use, site conditions or other factors may change over time, and additional work may be required with the passage of time. Any other party who wishes to use this report shall notify Kleinfelder of such intended use. Based on the intended use of the report, Kleinfelder may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the client or anyone else will release Kleinfelder from any liability resulting from the use of this report by any unauthorized party.

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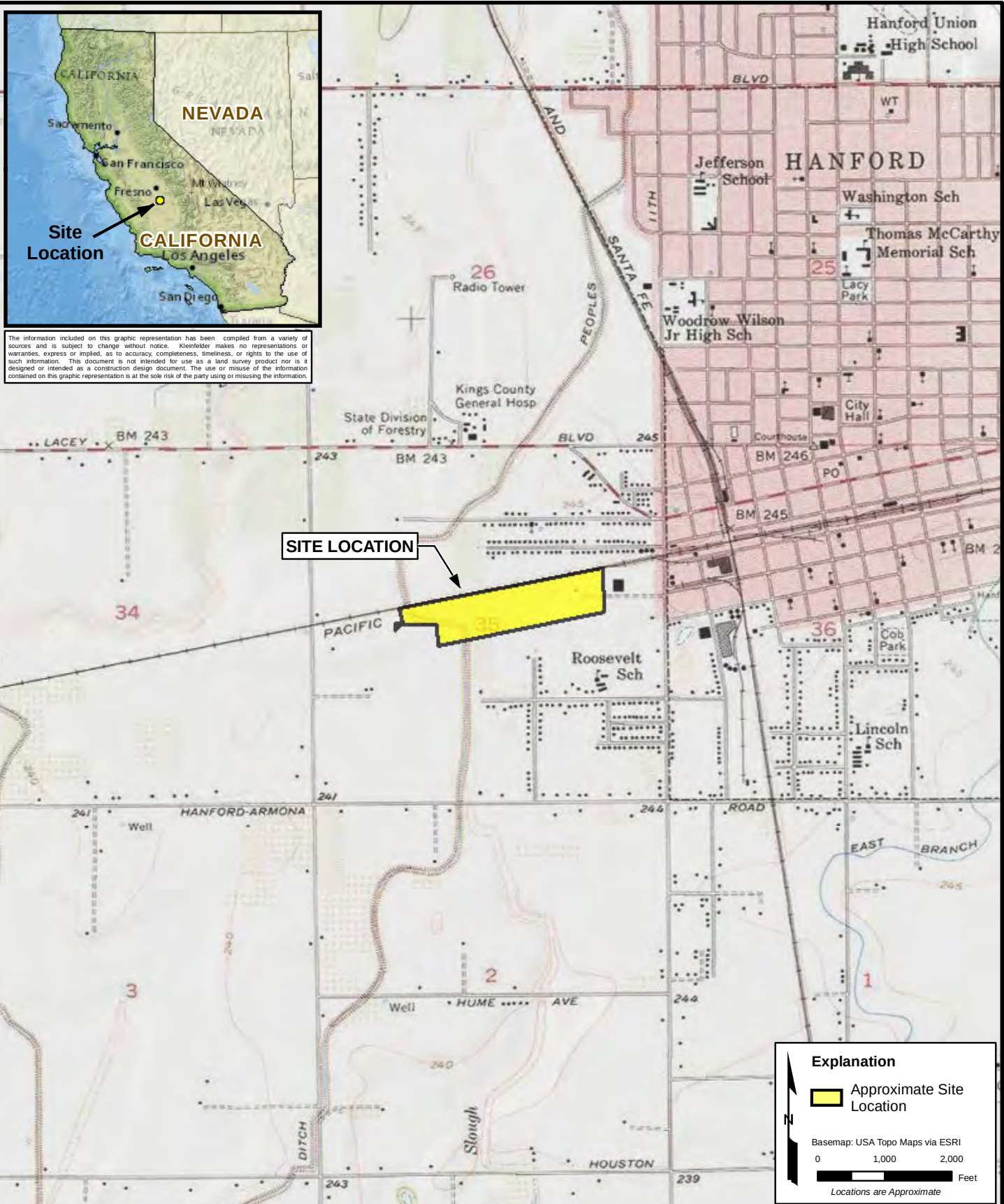
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## FIGURES

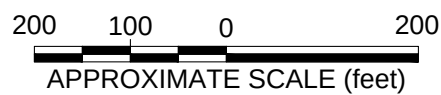
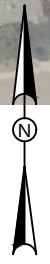
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|----------------------------------------------|----|
| Site Vicinity Map                            | 1  |
| Exploration Location Map                     | 2  |
| Site Plan and Geology Map                    | 3  |
| Area Geology Map                             | 4  |
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| Cross Section A-A'                           | 6  |
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|                                                                                     |             |              |                                                                               |                 |
|-------------------------------------------------------------------------------------|-------------|--------------|-------------------------------------------------------------------------------|-----------------|
|  | PROJECT:    | 20210045     | SITE VICINITY MAP                                                             | FIGURE<br><br>1 |
|                                                                                     | DRAWN:      | JUNE 2020    |                                                                               |                 |
|                                                                                     | DRAWN BY:   | RA           | PROPOSED HANFORD PLACE<br>MEDICAL & MIXED-USE PROPERTY<br>HANFORD, CALIFORNIA |                 |
|                                                                                     | CHECKED BY: | AA           |                                                                               |                 |
|                                                                                     | FILE NAME:  | Figure_1.mxd |                                                                               |                 |





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EXPLANATION

- B-9 APPROXIMATE BORING LOCATION
- R-7 APPROXIMATE R-VALUE LOCATION

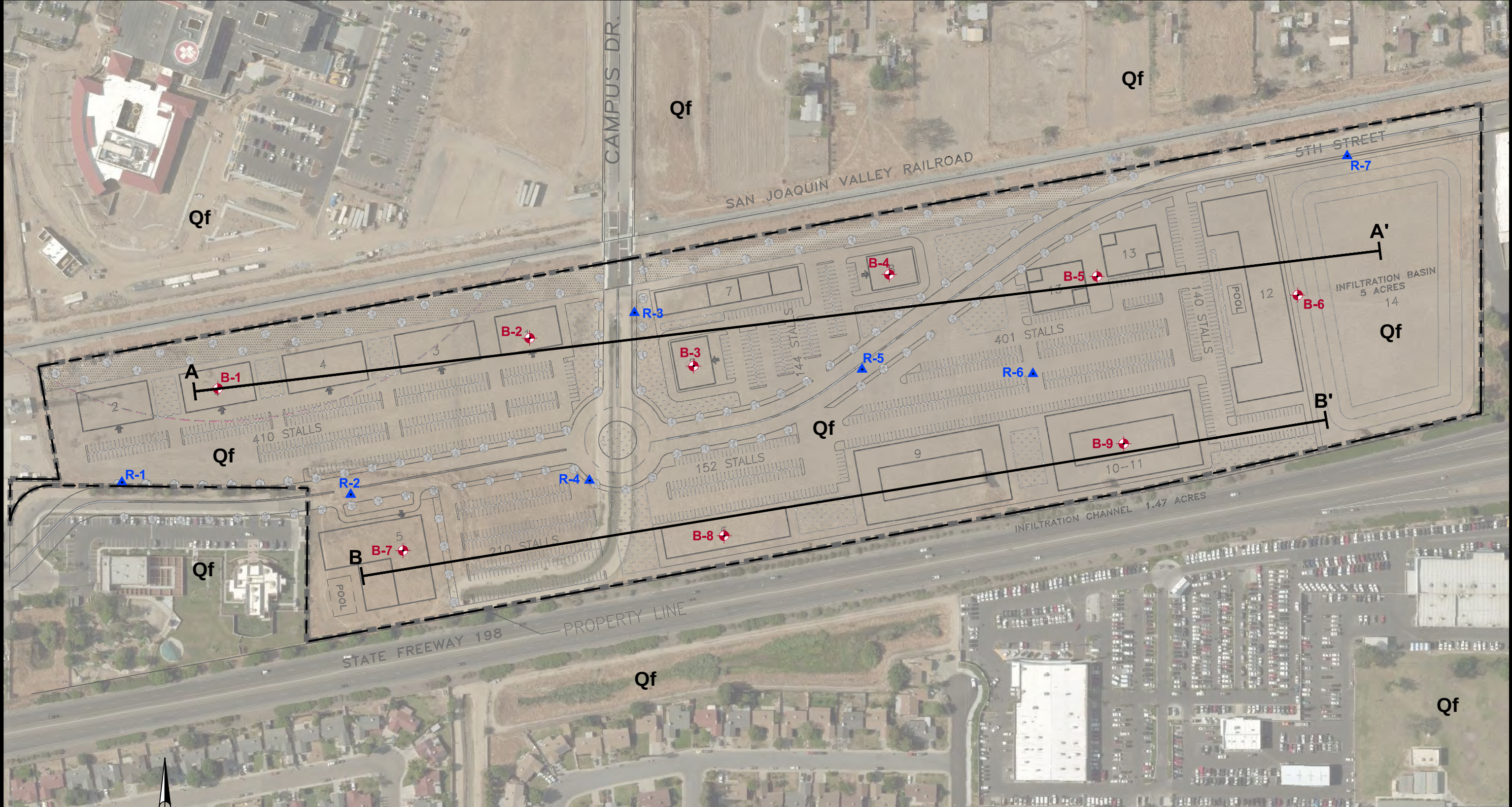
REFERENCE: BASE MAP PROVIDED BY ZUMWALT HANSEN, INC., DATED 09/24/19



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| PROJECT:   | 20210045 |
| DRAWN BY   | DMF      |
| CHECKED BY | CE       |
| DATE:      | 05/2020  |
| REVISED:   | 05/2020  |

|                                                                               |                 |
|-------------------------------------------------------------------------------|-----------------|
| EXPLORATION LOCATION MAP                                                      | FIGURE<br><br>2 |
| PROPOSED HANFORD PLACE<br>MEDICAL & MIXED-USE PROPERTY<br>HANFORD, CALIFORNIA |                 |





**EXPLANATION**

- B-9**  APPROXIMATE BORING LOCATION  
**R-7**  APPROXIMATE R-VALUE LOCATION

**B**  **B'**  
CROSS-SECTION LOCATION

**GEOLOGIC UNITS**

**Qf** FAN DEPOSITS

**REFERENCE:** BASE MAP PROVIDED BY ZUMWALT HANSEN, INC., DATED 09/24/19



|             |          |
|-------------|----------|
| PROJECT:    | 20210045 |
| DRAWN BY:   | DMF      |
| CHECKED BY: | CE       |
| DATE:       | 05/2020  |
| REVISED:    | 05/2020  |

**SITE PLAN AND GEOLOGY MAP**

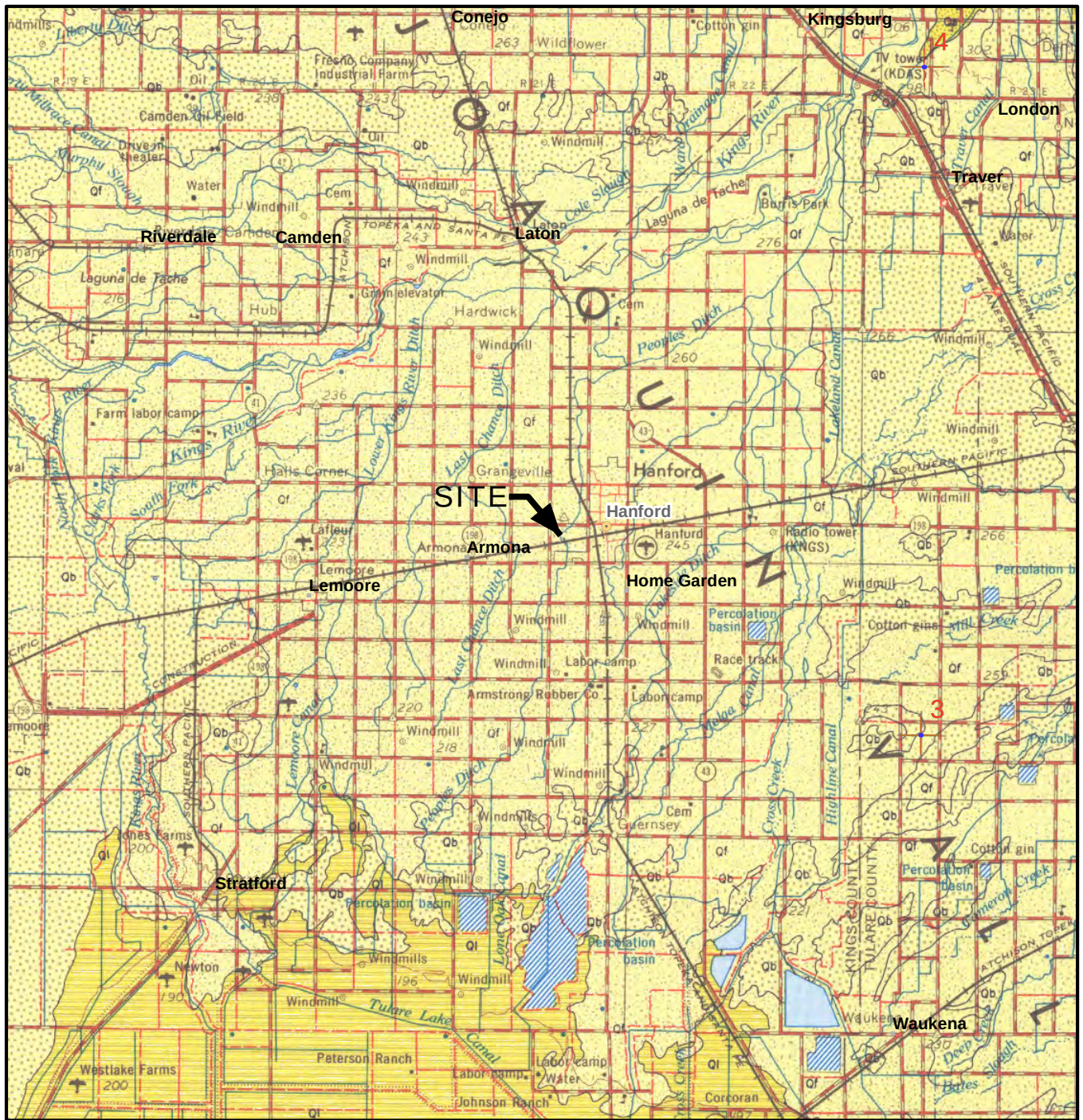
PROPOSED HANFORD PLACE  
MEDICAL & MIXED-USE PROPERTY  
HANFORD, CALIFORNIA

FIGURE

3

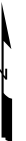
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- Qf Fan deposits
- Qb Basin deposits
- Ql Quaternary lake deposits

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Miles



**REFERENCE:**

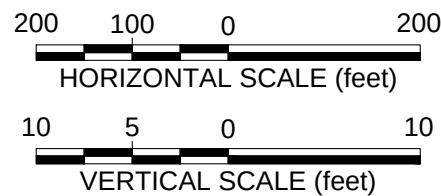
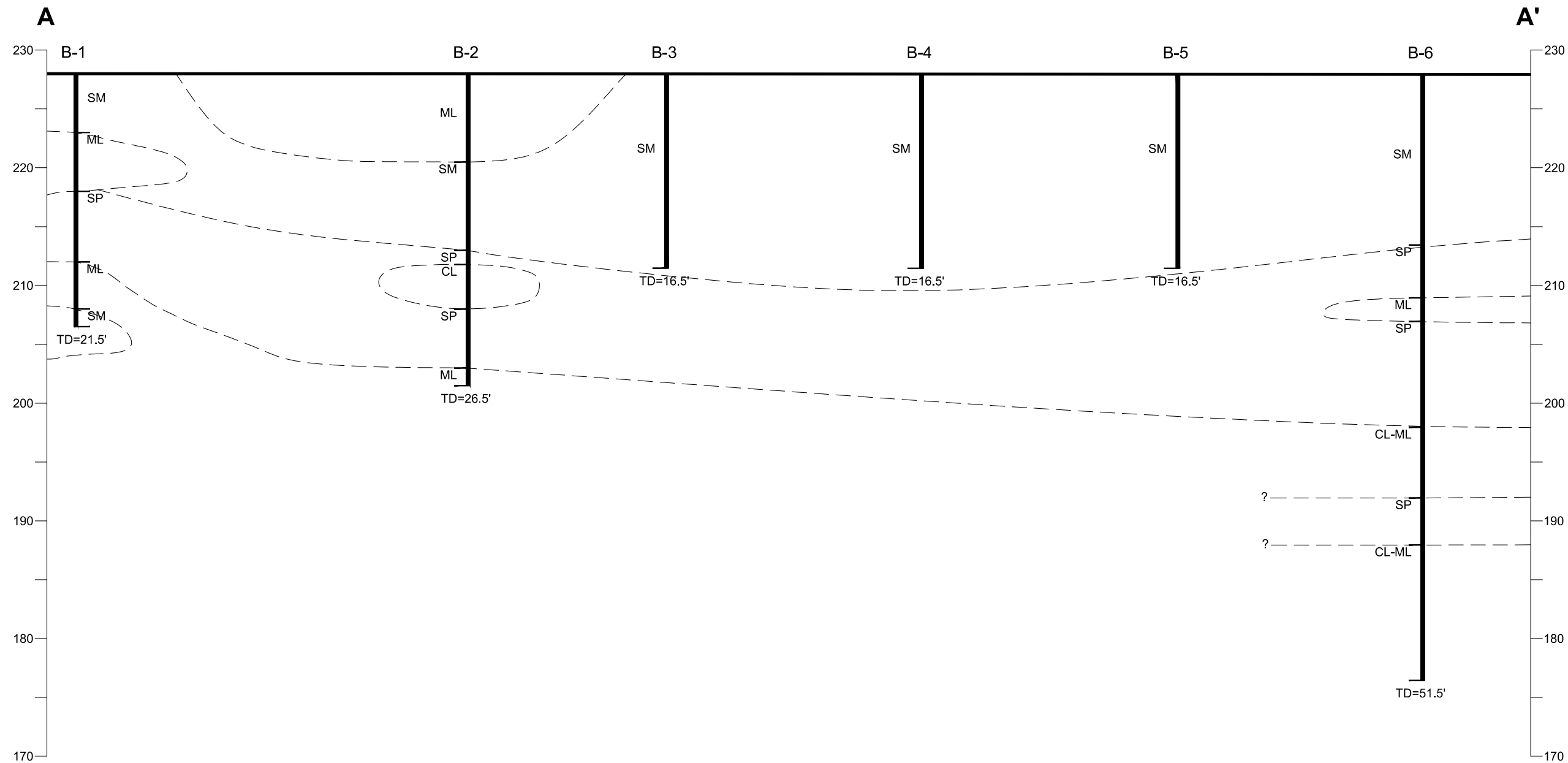
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| <br><b>KLEINFELDER</b><br><i>Bright People. Right Solutions.</i><br>www.kleinfelder.com | PROJECT NO. 20210045       | <b>AREA GEOLOGY MAP</b>                                                       | FIGURE<br><br><b>4</b> |
|                                                                                                                                                                            | DRAWN: JUNE 2020           |                                                                               |                        |
|                                                                                                                                                                            | DRAWN BY: RA               | PROPOSED HANFORD PLACE<br>MEDICAL & MIXED-USE PROPERTY<br>HANFORD, CALIFORNIA |                        |
|                                                                                                                                                                            | CHECKED BY: AA             |                                                                               |                        |
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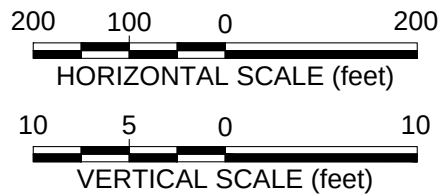
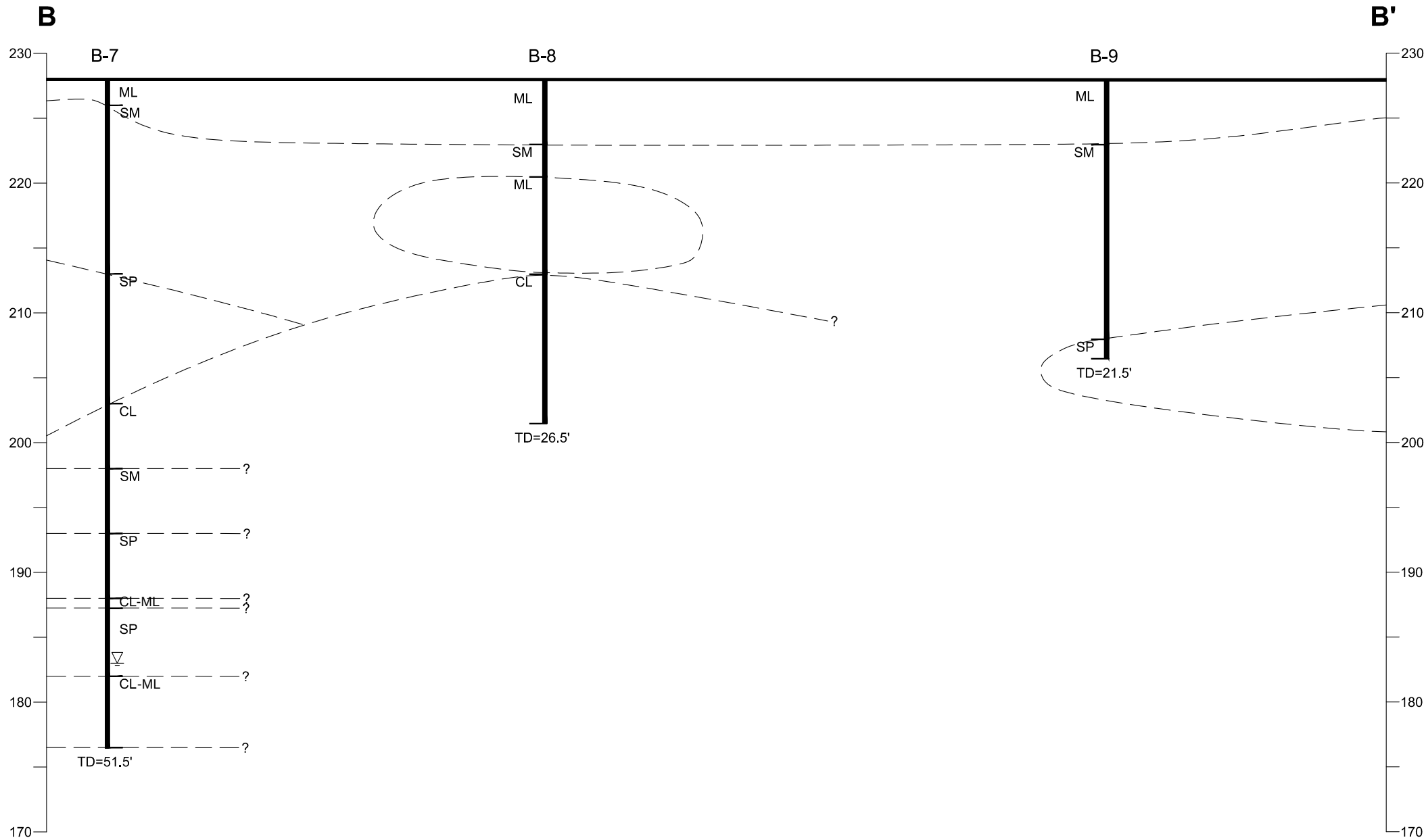
PROJECT: 20210045  
DRAWN BY DMF  
CHECKED BY AA  
DATE: 06/2020  
REVISED: 06/2020

CROSS-SECTION A-A'

PROPOSED HANFORD PLACE  
MEDICAL & MIXED-USE PROPERTY  
HANFORD, CALIFORNIA

FIGURE

6



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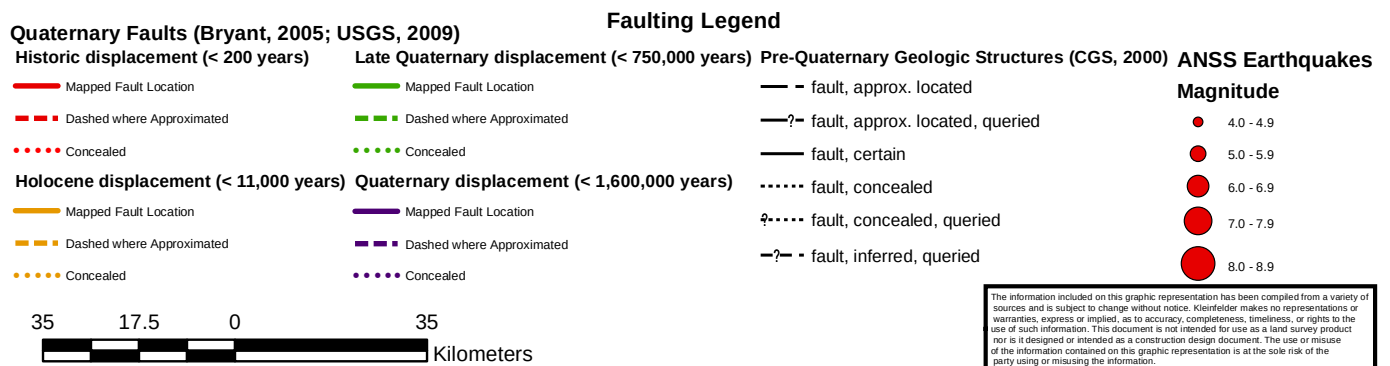
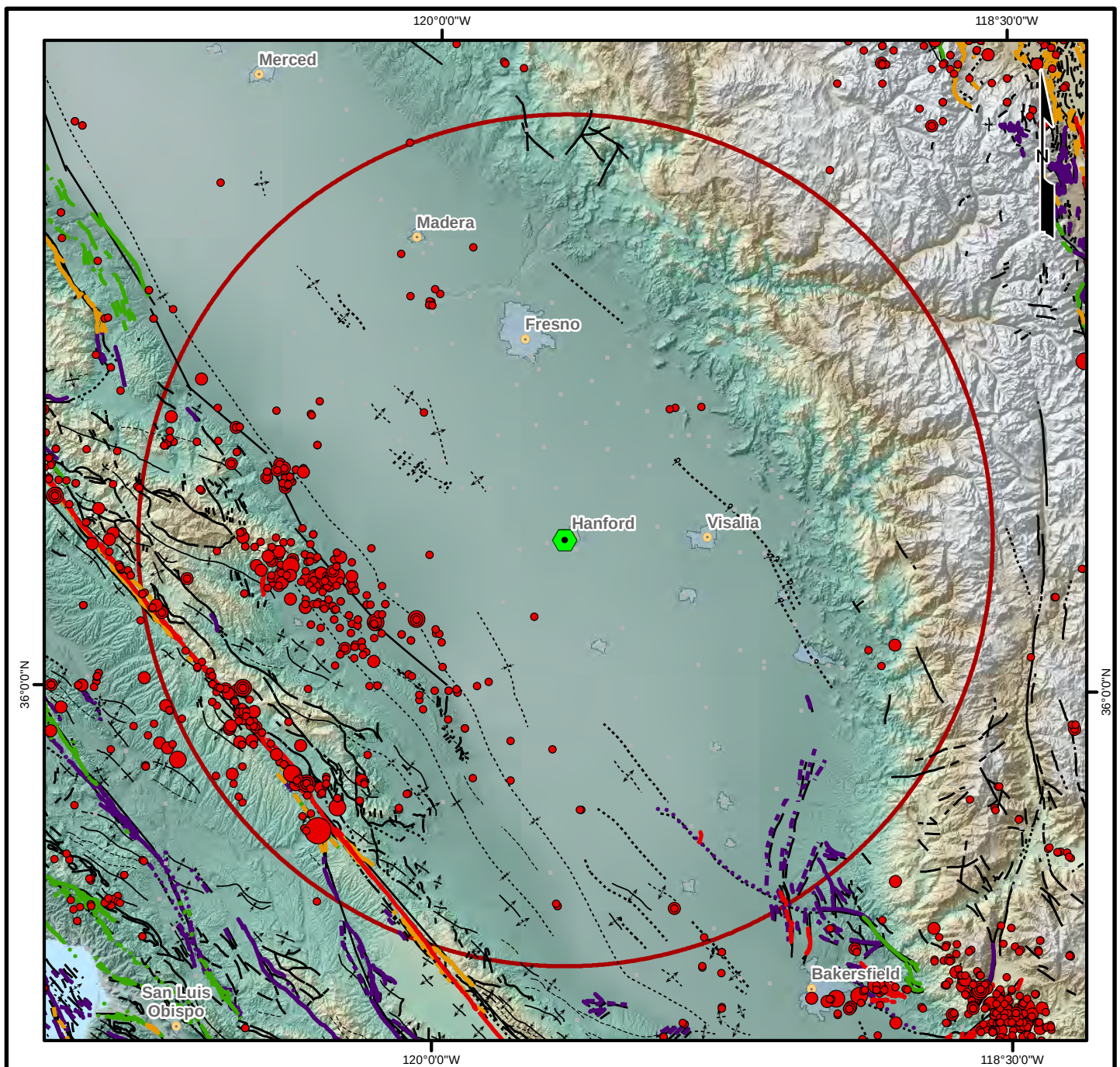
PROJECT: 20210045  
DRAWN BY DMF  
CHECKED BY AA  
DATE: 06/2020  
REVISED: 06/2020

CROSS-SECTION B-B'  
  
PROPOSED HANFORD PLACE  
MEDICAL & MIXED-USE PROPERTY  
HANFORD, CALIFORNIA

FIGURE

7





|                                                                                                                                                                            |             |              |                                                                               |                               |
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| <br><b>KLEINFELDER</b><br><i>Bright People. Right Solutions.</i><br>www.kleinfelder.com | PROJECT NO. | 20210045     | <b>REGIONAL FAULT MAP<br/>AND EARTHQUAKE EPICENTERS<br/>(1800 - MAY 2020)</b> | <b>FIGURE</b><br><br><b>8</b> |
|                                                                                                                                                                            | DRAWN:      | JUNE 2020    |                                                                               |                               |
|                                                                                                                                                                            | DRAWN BY:   | RA           |                                                                               |                               |
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## LEGEND

### SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

### FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

### OTHER FLOOD AREAS

- ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

### OTHER AREAS

- ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D** Areas in which flood hazards are undetermined, but possible.

### COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

### OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D Boundary
- CBRS and OPA Boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 Base Flood Elevation line and value; elevation in feet\* (EL 987)
- Base Flood Elevation value where uniform within zone; elevation in feet\*

\*Referenced to the North American Vertical Datum of 1988

Cross section line

Transect line

Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere

1000-meter Universal Transverse Mercator grid values, zone 10 and 11

5000-foot grid ticks: California State Plane coordinate system, zone IV (FIPSZONE 0404), Lambert Conformal Conic Projection

Bench mark (see explanation in Notes to Users section of this FIRM panel)

• M1.5 River Mile

### MAP REPOSITORIES

Refer to Map Repositories list on Map Index.

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP PANEL  
JUNE 16, 2009

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

### REFERENCE:

FEMA Flood Insurance Rate map, Kings County, California, Map # 06031C0185C, dated 2009



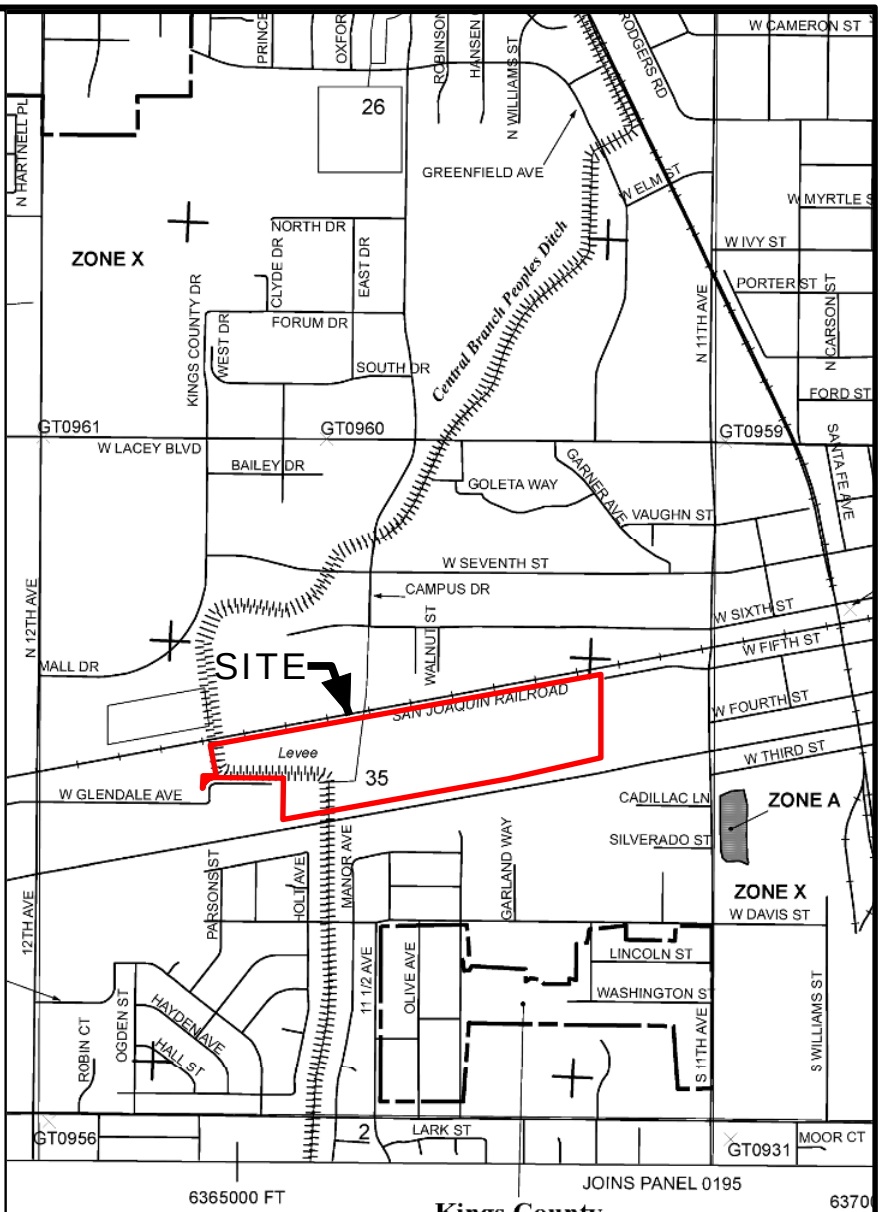
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| PROJECT NO. | 20210045     |
| DRAWN:      | JUNE 2020    |
| DRAWN BY:   | RA           |
| CHECKED BY: | AA           |
| FILE NAME:  | Figure_9.mxd |

## FEMA FLOOD MAP

PROPOSED HANFORD PLACE  
MEDICAL & MIXED-USE PROPERTY  
HANFORD, CALIFORNIA

FIGURE

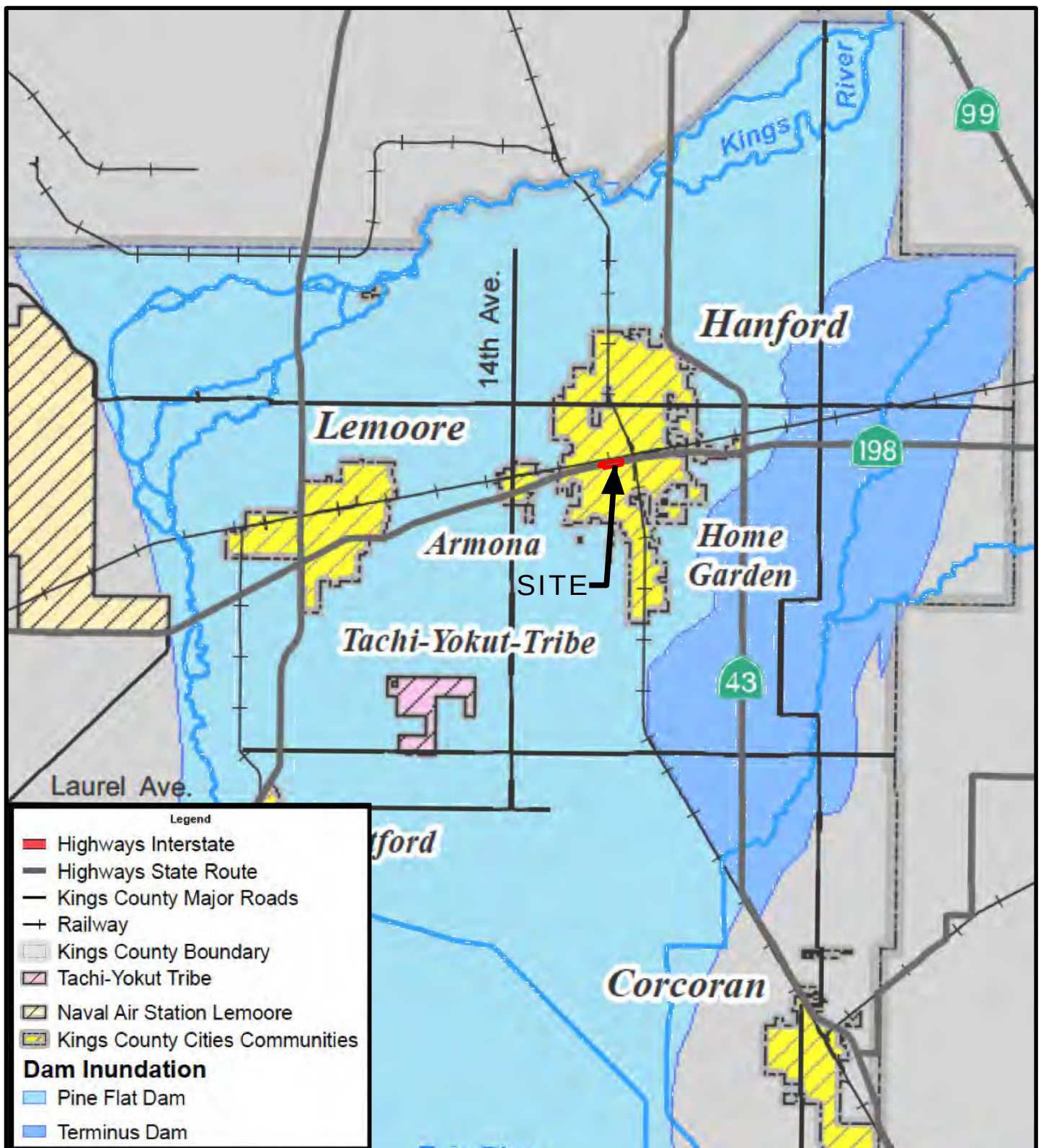
9



0 1,500 3,000 Feet

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| <div>REFERENCE:<br/>Kings County Multi-jurisdictional Local<br/>Hazard Mitigation Plan, December 2012</div> <div><div>024</div><div>Miles</div></div> <div><div><div></div><div></div><div></div></div><div></div></div> <div><div>The information included on this graphic representation has been compiled from a variety of sources and is subject to change without notice. Kleinfelder makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a land survey product nor is it designed or intended as a construction design document. 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|  |  |  |

## APPENDIX A

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|                      |          |
|----------------------|----------|
| Graphics Key         | A-1      |
| Soil Description Key | A-2      |
| Boring Logs          | A-3/A-11 |

SAMPLE/SAMPLER TYPE GRAPHICS

|  |                                                                                                                       |
|--|-----------------------------------------------------------------------------------------------------------------------|
|  | BULK SAMPLE                                                                                                           |
|  | CALIFORNIA SAMPLER<br>(3 in. (76.2 mm.) outer diameter)                                                               |
|  | STANDARD PENETRATION SPLIT SPOON SAMPLER<br>(2 in. (50.8 mm.) outer diameter and 1-3/8 in. (34.9 mm.) inner diameter) |

GROUND WATER GRAPHICS

|  |                                                   |
|--|---------------------------------------------------|
|  | WATER LEVEL (level where first observed)          |
|  | WATER LEVEL (level after exploration completion)  |
|  | WATER LEVEL (additional levels after exploration) |
|  | OBSERVED SEEPAGE                                  |

NOTES

- The report and graphics key are an integral part of these logs. All data and interpretations in this log are subject to the explanations and limitations stated in the report.
- Lines separating strata on the logs represent approximate boundaries only. Actual transitions may be gradual or differ from those shown.
- No warranty is provided as to the continuity of soil or rock conditions between individual sample locations.
- Logs represent general soil or rock conditions observed at the point of exploration on the date indicated.
- In general, Unified Soil Classification System designations presented on the logs were based on visual classification in the field and were modified where appropriate based on gradation and index property testing.
- Fine grained soils that plot within the hatched area on the Plasticity Chart, and coarse grained soils with between 5% and 12% passing the No. 200 sieve require dual USCS symbols, i.e., GW-GM, GP-GM, GW-GC, GP-GC, GC-GM, SW-SM, SP-SM, SW-SC, SP-SC, SC-SM.
- If sampler is not able to be driven at least 6 inches then 50/X indicates number of blows required to drive the identified sampler X inches with a 140 pound hammer falling 30 inches.

ABBREVIATIONS

WOH - Weight of Hammer  
WOR - Weight of Rod

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D 2487)

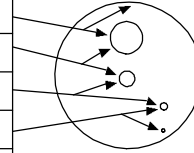
|                                                                                   |                                              |                          |  |       |                                                                                                   |
|-----------------------------------------------------------------------------------|----------------------------------------------|--------------------------|--|-------|---------------------------------------------------------------------------------------------------|
| GRAVELS<br>(More than half of coarse fraction is larger than the #200 sieve)      | CLEAN GRAVEL WITH <5% FINES                  | Cu ≥ 4 and 1 ≤ Cc ≤ 3    |  | GW    | WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES                                 |
|                                                                                   |                                              | Cu < 4 and/or 1 > Cc > 3 |  | GP    | POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES                               |
|                                                                                   | GRAVELS WITH 5% TO 12% FINES                 | Cu ≥ 4 and 1 ≤ Cc ≤ 3    |  | GW-GM | WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE FINES                                       |
|                                                                                   |                                              |                          |  | GW-GC | WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE CLAY FINES                                  |
|                                                                                   |                                              | Cu < 4 and/or 1 > Cc > 3 |  | GP-GM | POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE FINES                                     |
|                                                                                   |                                              |                          |  | GP-GC | POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE CLAY FINES                                |
|                                                                                   | GRAVELS WITH > 12% FINES                     |                          |  | GM    | SILTY GRAVELS, GRAVEL-SILT-SAND MIXTURES                                                          |
|                                                                                   |                                              |                          |  | GC    | CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES                                                         |
|                                                                                   |                                              |                          |  | GC-GM | CLAYEY GRAVELS, GRAVEL-SAND-CLAY-SILT MIXTURES                                                    |
| COARSE GRAINED SOILS<br>(More than half of material is smaller than the #4 sieve) | CLEAN SANDS WITH <5% FINES                   | Cu ≥ 6 and 1 ≤ Cc ≤ 3    |  | SW    | WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES                                   |
|                                                                                   |                                              | Cu < 6 and/or 1 > Cc > 3 |  | SP    | POORLY GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES                                 |
|                                                                                   | SANDS WITH 5% TO 12% FINES                   | Cu ≥ 6 and 1 ≤ Cc ≤ 3    |  | SW-SM | WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE FINES                                         |
|                                                                                   |                                              |                          |  | SW-SC | WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE CLAY FINES                                    |
|                                                                                   |                                              | Cu < 6 and/or 1 > Cc > 3 |  | SP-SM | POORLY GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE FINES                                       |
|                                                                                   |                                              |                          |  | SP-SC | POORLY GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE CLAY FINES                                  |
|                                                                                   | SANDS WITH > 12% FINES                       |                          |  | SM    | SILTY SANDS, SAND-GRAVEL-SILT MIXTURES                                                            |
|                                                                                   |                                              |                          |  | SC    | CLAYEY SANDS, SAND-GRAVEL-CLAY MIXTURES                                                           |
|                                                                                   |                                              |                          |  | SC-SM | CLAYEY SANDS, SAND-SILT-CLAY MIXTURES                                                             |
| FINE GRAINED SOILS<br>(Half or more of material is smaller than the #200 sieve)   | SILTS AND CLAYS (Liquid Limit less than 50)  |                          |  | ML    | INORGANIC SILTS AND VERY FINE SANDS, SILTY OR CLAYEY FINE SANDS, SILTS WITH SLIGHT PLASTICITY     |
|                                                                                   |                                              |                          |  | CL    | INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS |
|                                                                                   |                                              |                          |  | CL-ML | INORGANIC CLAYS-SILTS OF LOW PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS     |
|                                                                                   | SILTS AND CLAYS (Liquid Limit 50 or greater) |                          |  | OL    | ORGANIC SILTS & ORGANIC SILTY CLAYS OF LOW PLASTICITY                                             |
|                                                                                   |                                              |                          |  | MH    | INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILT                                      |
|                                                                                   |                                              |                          |  | CH    | INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS                                                     |
|                                                                                   |                                              |                          |  | OH    | ORGANIC CLAYS & ORGANIC SILTS OF MEDIUM-TO-HIGH PLASTICITY                                        |

NOTE: USE MATERIAL DESCRIPTION ON THE LOG TO DEFINE A GRAPHIC THAT MAY NOT BE PROVIDED ON THIS LEGEND.

|  |                                           |                                                                                                   |          |
|--|-------------------------------------------|---------------------------------------------------------------------------------------------------|----------|
|  | PROJECT NO.:<br>20210045.001A             | GRAPHICS KEY<br><br>PROPOSED HANFORD PLACE<br>MEDICAL & MIXED-USE PROPERTY<br>HANFORD, CALIFORNIA | APPENDIX |
|  | DRAWN BY:<br><br>CHECKED BY:<br><br>DATE: |                                                                                                   | A-1      |

**GRAIN SIZE**

| DESCRIPTION | SIEVE SIZE                            | GRAIN SIZE                           | APPROXIMATE SIZE               |
|-------------|---------------------------------------|--------------------------------------|--------------------------------|
| Boulders    | >12 in. (304.8 mm.)                   | >12 in. (304.8 mm.)                  | Larger than basketball-sized   |
| Cobbles     | 3 - 12 in. (76.2 - 304.8 mm.)         | 3 - 12 in. (76.2 - 304.8 mm.)        | Fist-sized to basketball-sized |
| Gravel      | coarse<br>3/4 - 3 in. (19 - 76.2 mm.) | 3/4 - 3 in. (19 - 76.2 mm.)          | Thumb-sized to fist-sized      |
|             | fine<br>#4 - 3/4 in. (#4 - 19 mm.)    | 0.19 - 0.75 in. (4.8 - 19 mm.)       | Pea-sized to thumb-sized       |
| Sand        | coarse<br>#10 - #4                    | 0.075 - 0.19 in. (2 - 4.9 mm.)       | Rock salt-sized to pea-sized   |
|             | medium<br>#40 - #10                   | 0.017 - 0.075 in. (0.43 - 2 mm.)     | Sugar-sized to rock salt-sized |
|             | fine<br>#200 - #40                    | 0.0029 - 0.017 in. (0.07 - 0.43 mm.) | Flour-sized to sugar-sized     |
| Fines       | Passing #200                          | <0.0029 in. (<0.07 mm.)              | Flour-sized and smaller        |

**SECONDARY CONSTITUENT**

|             | AMOUNT                                |                                         |
|-------------|---------------------------------------|-----------------------------------------|
| Term of Use | Secondary Constituent is Fine Grained | Secondary Constituent is Coarse Grained |
| Trace       | <5%                                   | <15%                                    |
| With        | ≥5 to <15%                            | ≥15 to <30%                             |
| Modifier    | ≥15%                                  | ≥30%                                    |

**MOISTURE CONTENT**

| DESCRIPTION | FIELD TEST                                            |
|-------------|-------------------------------------------------------|
| Dry         | Absence of moisture, dusty, dry to the touch          |
| Moist       | Damp but no visible water                             |
| Wet         | Visible free water, usually soil is below water table |

**CEMENTATION**

| DESCRIPTION | FIELD TEST                                                 |
|-------------|------------------------------------------------------------|
| Weakly      | Crumbles or breaks with handling or slight finger pressure |
| Moderately  | Crumbles or breaks with considerable finger pressure       |
| Strongly    | Will not crumble or break with finger pressure             |

**CONSISTENCY - FINE-GRAINED SOIL**

| CONSISTENCY  | SPT - N <sub>60</sub><br>(# blows / ft) | Pocket Pen<br>(tsf) | UNCONFINED COMPRESSIVE STRENGTH (Q <sub>u</sub> )(psf) | VISUAL / MANUAL CRITERIA                                                               |
|--------------|-----------------------------------------|---------------------|--------------------------------------------------------|----------------------------------------------------------------------------------------|
| Very Soft    | <2                                      | PP < 0.25           | <500                                                   | Thumb will penetrate more than 1 inch (25 mm). Extrudes between fingers when squeezed. |
| Soft         | 2 - 4                                   | 0.25 ≤ PP < 0.5     | 500 - 1000                                             | Thumb will penetrate soil about 1 inch (25 mm). Remolded by light finger pressure.     |
| Medium Stiff | 4 - 8                                   | 0.5 ≤ PP < 1        | 1000 - 2000                                            | Thumb will penetrate soil about 1/4 inch (6 mm). Remolded by strong finger pressure.   |
| Stiff        | 8 - 15                                  | 1 ≤ PP < 2          | 2000 - 4000                                            | Can be imprinted with considerable pressure from thumb.                                |
| Very Stiff   | 15 - 30                                 | 2 ≤ PP < 4          | 4000 - 8000                                            | Thumb will not indent soil but readily indented with thumbnail.                        |
| Hard         | >30                                     | 4 ≤ PP              | >8000                                                  | Thumbnail will not indent soil.                                                        |

**REACTION WITH HYDROCHLORIC ACID**

| DESCRIPTION | FIELD TEST                                         |
|-------------|----------------------------------------------------|
| None        | No visible reaction                                |
| Weak        | Some reaction, with bubbles forming slowly         |
| Strong      | Violent reaction, with bubbles forming immediately |

**APPARENT / RELATIVE DENSITY - COARSE-GRAINED SOIL**

| APPARENT DENSITY | SPT-N <sub>60</sub><br>(# blows/ft) | MODIFIED CA SAMPLER<br>(# blows/ft) | CALIFORNIA SAMPLER<br>(# blows/ft) | RELATIVE DENSITY (%) |
|------------------|-------------------------------------|-------------------------------------|------------------------------------|----------------------|
| Very Loose       | <4                                  | <4                                  | <5                                 | 0 - 15               |
| Loose            | 4 - 10                              | 5 - 12                              | 5 - 15                             | 15 - 35              |
| Medium Dense     | 10 - 30                             | 12 - 35                             | 15 - 40                            | 35 - 65              |
| Dense            | 30 - 50                             | 35 - 60                             | 40 - 70                            | 65 - 85              |
| Very Dense       | >50                                 | >60                                 | >70                                | 85 - 100             |

FROM TERZAGHI AND PECK, 1948

**PLASTICITY**

| DESCRIPTION | LL      | PI      |
|-------------|---------|---------|
| Non-Plastic | NP      | NP      |
| Low         | < 30    | < 15    |
| Medium      | 30 - 50 | 15 - 25 |
| High        | > 50    | > 25    |

LL is from Casagrande, 1948. PI is from Holtz, 1959.

**STRUCTURE**

| DESCRIPTION  | CRITERIA                                                                                                                      |
|--------------|-------------------------------------------------------------------------------------------------------------------------------|
| Stratified   | Alternating layers of varying material or color with layers at least 1/4-in. thick, note thickness.                           |
| Laminated    | Alternating layers of varying material or color with the layer less than 1/4-in. thick, note thickness.                       |
| Fissured     | Breaks along definite planes of fracture with little resistance to fracturing.                                                |
| Slickensided | Fracture planes appear polished or glossy, sometimes striated.                                                                |
| Blocky       | Cohesive soil that can be broken down into small angular lumps which resist further breakdown.                                |
| Lensed       | Inclusion of small pockets of different soils, such as small lenses of sand scattered through a mass of clay; note thickness. |

**ANGULARITY**

| DESCRIPTION | CRITERIA                                                                        |
|-------------|---------------------------------------------------------------------------------|
| Angular     | Particles have sharp edges and relatively plane sides with unpolished surfaces. |
| Subangular  | Particles are similar to angular description but have rounded edges.            |
| Subrounded  | Particles have nearly plane sides but have well-rounded corners and edges.      |
| Rounded     | Particles have smoothly curved sides and no edges.                              |

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**SOIL DESCRIPTION KEY**PROPOSED HANFORD PLACE  
MEDICAL & MIXED-USE PROPERTY  
HANFORD, CALIFORNIA**APPENDIX****A-2**

|                          |               |                            |                   |                                                  |
|--------------------------|---------------|----------------------------|-------------------|--------------------------------------------------|
| <b>Date Begin - End:</b> | 4/20/2020     | <b>Drilling Company:</b>   | Moore Twining     | <b>BORING LOG B-1</b>                            |
| <b>Logged By:</b>        | J. Green      | <b>Drill Crew:</b>         |                   |                                                  |
| <b>Hor.-Vert. Datum:</b> | Not Available | <b>Drilling Equipment:</b> | CME-75            | <b>Hammer Type - Drop:</b> 140 lb. Auto - 30 in. |
| <b>Plunge:</b>           | -90 degrees   | <b>Drilling Method:</b>    | Hollow Stem Auger | <b>Hammer Efficiency:</b> 86.4%                  |
| <b>Weather:</b>          | Not Available | <b>Auger Diameter:</b>     | 8 in. O.D.        | <b>Hammer Cal. Date:</b> 5/14/2019               |

| Depth (feet) | Graphical Log | FIELD EXPLORATION                                                          |             |                                                                |                              |                       | LABORATORY RESULTS   |                    |                |                  |              |                                     |                              |
|--------------|---------------|----------------------------------------------------------------------------|-------------|----------------------------------------------------------------|------------------------------|-----------------------|----------------------|--------------------|----------------|------------------|--------------|-------------------------------------|------------------------------|
|              |               | Surface Condition: Grass & Weeds                                           | Sample Type | Blow Counts(BC)=<br>Uncorr. Blows/6 in.<br>Pocket Pen(PP)= tsf | Recovery<br>(NR=No Recovery) | N <sub>60</sub> Value | Water<br>Content (%) | Dry Unit Wt. (pcf) | Passing #4 (%) | Passing #200 (%) | Liquid Limit | Plasticity Index<br>(NP=NonPlastic) | Additional Tests/<br>Remarks |
|              |               | Lithologic Description                                                     |             |                                                                |                              |                       |                      |                    |                |                  |              |                                     |                              |
|              |               | <b>Silty SAND (SM):</b> medium dense, brown, moist, fine to medium-grained |             |                                                                |                              |                       |                      |                    |                |                  |              |                                     |                              |

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## BORING LOG B-1

PROPOSED HANFORD PLACE  
MEDICAL & MIXED-USE PROPERTY  
HANFORD, CALIFORNIA

APPENDIX

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|                          |               |                            |                   |                                                  |
|--------------------------|---------------|----------------------------|-------------------|--------------------------------------------------|
| <b>Date Begin - End:</b> | 4/20/2020     | <b>Drilling Company:</b>   | Moore Twining     | <b>BORING LOG B-2</b>                            |
| <b>Logged By:</b>        | J. Green      | <b>Drill Crew:</b>         |                   |                                                  |
| <b>Hor.-Vert. Datum:</b> | Not Available | <b>Drilling Equipment:</b> | CME-75            | <b>Hammer Type - Drop:</b> 140 lb. Auto - 30 in. |
| <b>Plunge:</b>           | -90 degrees   | <b>Drilling Method:</b>    | Hollow Stem Auger | <b>Hammer Efficiency:</b> 86.4%                  |
| <b>Weather:</b>          | Not Available | <b>Auger Diameter:</b>     | 8 in. O.D.        | <b>Hammer Cal. Date:</b> 5/14/2019               |

| Depth (feet) | Graphical Log | FIELD EXPLORATION                                                                                                                          |             |                                                                |                              |                       | LABORATORY RESULTS   |                                                                                                                       |                |                  |              |                                     |                              |
|--------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------------------------------------------------|------------------------------|-----------------------|----------------------|-----------------------------------------------------------------------------------------------------------------------|----------------|------------------|--------------|-------------------------------------|------------------------------|
|              |               | Surface Condition: Grass & Weeds                                                                                                           | Sample Type | Blow Counts(BC)=<br>Uncorr. Blows/6 in.<br>Pocket Pen(PP)= tsf | Recovery<br>(NR=No Recovery) | N <sub>60</sub> Value | Water<br>Content (%) | Dry Unit Wt. (pcf)                                                                                                    | Passing #4 (%) | Passing #200 (%) | Liquid Limit | Plasticity Index<br>(NP=NonPlastic) | Additional Tests/<br>Remarks |
|              |               | <b>Sandy SILT (ML):</b> medium stiff, light brown, moist, low plasticity                                                                   |             |                                                                |                              |                       |                      |                                                                                                                       |                |                  |              |                                     |                              |
| 5            |               | hard                                                                                                                                       |             | BC=6<br>6<br>9                                                 |                              | 22                    |                      |                                                                                                                       |                | 60               |              |                                     |                              |
|              |               |                                                                                                                                            |             | BC=25<br>27<br>25                                              |                              | 75                    |                      |                                                                                                                       |                |                  |              |                                     |                              |
| 10           |               | <b>Silty SAND (SM):</b> medium dense, light brown, moist, fine-grained                                                                     |             | BC=6<br>7<br>8                                                 |                              | 22                    |                      |                                                                                                                       |                |                  |              |                                     |                              |
|              |               |                                                                                                                                            |             | BC=8<br>10<br>11                                               |                              | 30                    | 6.5                  | 98.8                                                                                                                  |                |                  |              |                                     |                              |
| 15           |               | <b>Poorly Graded SAND (SP):</b> medium dense, grayish brown, moist, fine-grained                                                           |             | BC=3<br>3<br>3                                                 |                              | 9                     |                      |                                                                                                                       |                |                  |              |                                     |                              |
|              |               | <b>Sandy Lean CLAY (CL):</b> medium stiff, dark brown, moist, low to medium plasticity                                                     |             |                                                                |                              |                       |                      |                                                                                                                       |                |                  |              |                                     |                              |
| 20           |               | <b>Poorly Graded SAND (SP):</b> medium dense, gray, moist, fine-grained                                                                    |             | BC=8<br>9<br>12                                                |                              | 30                    |                      |                                                                                                                       |                |                  |              |                                     |                              |
| 25           |               | <b>Sandy SILT (ML):</b> medium stiff, gray, moist, non-plastic to low plasticity                                                           |             | BC=8<br>7<br>9                                                 |                              | 23                    |                      |                                                                                                                       |                |                  |              |                                     |                              |
| 30           |               | The boring was terminated at approximately 26.5 ft. below ground surface. The boring was backfilled with auger cuttings on April 20, 2020. |             |                                                                |                              |                       |                      | GROUNDWATER LEVEL INFORMATION:<br>Groundwater was not observed during drilling or after completion.<br>GENERAL NOTES: |                |                  |              |                                     |                              |

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## BORING LOG B-2

PROPOSED HANFORD PLACE  
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HANFORD, CALIFORNIA

APPENDIX

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|                                                  |                                           |                       |
|--------------------------------------------------|-------------------------------------------|-----------------------|
| <b>Date Begin - End:</b> 4/20/2020               | <b>Drilling Company:</b> Moore Twining    | <b>BORING LOG B-3</b> |
| <b>Logged By:</b> J. Green                       | <b>Drill Crew:</b>                        |                       |
| <b>Hor.-Vert. Datum:</b> Not Available           | <b>Drilling Equipment:</b> CME-75         |                       |
| <b>Plunge:</b> -90 degrees                       | <b>Drilling Method:</b> Hollow Stem Auger |                       |
| <b>Weather:</b> Not Available                    | <b>Auger Diameter:</b> 8 in. O.D.         |                       |
| <b>Hammer Type - Drop:</b> 140 lb. Auto - 30 in. |                                           |                       |
| <b>Hammer Efficiency:</b> 86.4%                  |                                           |                       |
| <b>Hammer Cal. Date:</b> 5/14/2019               |                                           |                       |

| Depth (feet) | Graphical Log                                                                      | FIELD EXPLORATION                                                                                                                          |                                                                                                        |                                                                |                              |                       | LABORATORY RESULTS                                                                                                           |                    |                |                  |              |                                                                                                                                  |                              |
|--------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|------------------------------|-----------------------|------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------|------------------|--------------|----------------------------------------------------------------------------------------------------------------------------------|------------------------------|
|              |                                                                                    | Surface Condition: Grass & Weeds                                                                                                           | Sample Type                                                                                            | Blow Counts(BC)=<br>Uncorr. Blows/6 in.<br>Pocket Pen(PP)= tsf | Recovery<br>(NR=No Recovery) | N <sub>60</sub> Value | Water<br>Content (%)                                                                                                         | Dry Unit Wt. (pcf) | Passing #4 (%) | Passing #200 (%) | Liquid Limit | Plasticity Index<br>(NP=NonPlastic)                                                                                              | Additional Tests/<br>Remarks |
|              |                                                                                    | Lithologic Description                                                                                                                     |                                                                                                        |                                                                |                              |                       |                                                                                                                              |                    |                |                  |              |                                                                                                                                  |                              |
| 5            |  | <b>Silty SAND (SM):</b> medium dense, yellowish brown, moist, fine-grained, pinholes                                                       | <br>BC=10<br>9<br>10  |                                                                | 27                           |                       |                                                                                                                              |                    |                |                  |              | <b>Consolidation</b><br><b>Direct Shear=</b><br>Peak Cohesion: 740 psf<br>Peak Friction Angle: 27.0°<br>Peak Tangent Angle: 0.52 |                              |
|              |                                                                                    |                                                                                                                                            | <br>BC=8<br>12<br>13  |                                                                | 36                           | 3.2                   | 96.0                                                                                                                         |                    |                |                  |              |                                                                                                                                  |                              |
| 10           |                                                                                    | light grayish brown                                                                                                                        | <br>BC=10<br>11<br>13 |                                                                | 35                           |                       |                                                                                                                              |                    |                |                  |              |                                                                                                                                  |                              |
| 15           |                                                                                    | reddish brown                                                                                                                              | <br>BC=7<br>8<br>10   |                                                                | 26                           |                       |                                                                                                                              |                    |                |                  |              |                                                                                                                                  |                              |
| 20           |                                                                                    | The boring was terminated at approximately 16.5 ft. below ground surface. The boring was backfilled with auger cuttings on April 20, 2020. |                                                                                                        |                                                                |                              |                       | GROUNDWATER LEVEL INFORMATION:<br>Groundwater was not observed during drilling or after completion.<br><u>GENERAL NOTES:</u> |                    |                |                  |              |                                                                                                                                  |                              |
| 25           |                                                                                    |                                                                                                                                            |                                                                                                        |                                                                |                              |                       |                                                                                                                              |                    |                |                  |              |                                                                                                                                  |                              |
| 30           |                                                                                    |                                                                                                                                            |                                                                                                        |                                                                |                              |                       |                                                                                                                              |                    |                |                  |              |                                                                                                                                  |                              |

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## BORING LOG B-3

 PROPOSED HANFORD PLACE  
 MEDICAL & MIXED-USE PROPERTY  
 HANFORD, CALIFORNIA

APPENDIX

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|                                        |                                           |                                                  |
|----------------------------------------|-------------------------------------------|--------------------------------------------------|
| <b>Date Begin - End:</b> 4/21/2020     | <b>Drilling Company:</b> Moore Twining    | <b>BORING LOG B-4</b>                            |
| <b>Logged By:</b> J. Green             | <b>Drill Crew:</b>                        |                                                  |
| <b>Hor.-Vert. Datum:</b> Not Available | <b>Drilling Equipment:</b> CME-75         | <b>Hammer Type - Drop:</b> 140 lb. Auto - 30 in. |
| <b>Plunge:</b> -90 degrees             | <b>Drilling Method:</b> Hollow Stem Auger | <b>Hammer Efficiency:</b> 86.4%                  |
| <b>Weather:</b> Not Available          | <b>Auger Diameter:</b> 8 in. O.D.         | <b>Hammer Cal. Date:</b> 5/14/2019               |

| Depth (feet) | Graphical Log                                                                      | FIELD EXPLORATION                                                                                                                          |                                                                                     |                                                                |                              | LABORATORY RESULTS                                                                                                           |                      |                    |                |                  |              |                                     |                              |
|--------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------|------------------------------|------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------|----------------|------------------|--------------|-------------------------------------|------------------------------|
|              |                                                                                    | Surface Condition: Grass & Weeds                                                                                                           | Sample Type                                                                         | Blow Counts(BC)=<br>Uncorr. Blows/6 in.<br>Pocket Pen(PP)= tsf | Recovery<br>(NP=No Recovery) | N <sub>60</sub> Value                                                                                                        | Water<br>Content (%) | Dry Unit Wt. (pcf) | Passing #4 (%) | Passing #200 (%) | Liquid Limit | Plasticity Index<br>(NP=NonPlastic) | Additional Tests/<br>Remarks |
|              |                                                                                    | Lithologic Description                                                                                                                     |                                                                                     |                                                                |                              |                                                                                                                              |                      |                    |                |                  |              |                                     |                              |
|              |  | <b>Silty SAND (SM):</b> medium dense, light brown, moist, fine-grained, non-plastic, pinholes                                              |                                                                                     |                                                                |                              |                                                                                                                              |                      |                    |                |                  |              |                                     |                              |
| 5            |                                                                                    |                                                                                                                                            |    | BC=10<br>14<br>15                                              |                              | 42                                                                                                                           |                      |                    |                |                  |              |                                     |                              |
|              |                                                                                    |                                                                                                                                            |    | BC=6<br>9<br>14                                                |                              | 33                                                                                                                           | 3.5                  | 95.5               |                |                  |              |                                     |                              |
| 10           |                                                                                    | dense, brown                                                                                                                               |    | BC=31<br>32<br>35                                              |                              | 96                                                                                                                           |                      |                    |                |                  |              |                                     |                              |
| 15           |                                                                                    | medium dense, reddish brown                                                                                                                |  | BC=3<br>8<br>7                                                 |                              | 22                                                                                                                           |                      |                    |                |                  |              |                                     |                              |
| 20           |                                                                                    | The boring was terminated at approximately 16.5 ft. below ground surface. The boring was backfilled with auger cuttings on April 21, 2020. |                                                                                     |                                                                |                              | GROUNDWATER LEVEL INFORMATION:<br>Groundwater was not observed during drilling or after completion.<br><u>GENERAL NOTES:</u> |                      |                    |                |                  |              |                                     |                              |
| 25           |                                                                                    |                                                                                                                                            |                                                                                     |                                                                |                              |                                                                                                                              |                      |                    |                |                  |              |                                     |                              |
| 30           |                                                                                    |                                                                                                                                            |                                                                                     |                                                                |                              |                                                                                                                              |                      |                    |                |                  |              |                                     |                              |

|                                                                                     |                                                  |                                                                               |                                |
|-------------------------------------------------------------------------------------|--------------------------------------------------|-------------------------------------------------------------------------------|--------------------------------|
|  | PROJECT NO.:<br>20210045.001A                    | <b>BORING LOG B-4</b>                                                         | APPENDIX                       |
|                                                                                     | DRAWN BY: AA<br>CHECKED BY: ES<br>DATE: 6/4/2020 | PROPOSED HANFORD PLACE<br>MEDICAL & MIXED-USE PROPERTY<br>HANFORD, CALIFORNIA | <b>A-6</b><br><br>PAGE: 1 of 1 |

|                          |               |                            |                   |                                                  |
|--------------------------|---------------|----------------------------|-------------------|--------------------------------------------------|
| <b>Date Begin - End:</b> | 4/21/2020     | <b>Drilling Company:</b>   | Moore Twining     | <b>BORING LOG B-5</b>                            |
| <b>Logged By:</b>        | J. Green      | <b>Drill Crew:</b>         |                   |                                                  |
| <b>Hor.-Vert. Datum:</b> | Not Available | <b>Drilling Equipment:</b> | CME-75            | <b>Hammer Type - Drop:</b> 140 lb. Auto - 30 in. |
| <b>Plunge:</b>           | -90 degrees   | <b>Drilling Method:</b>    | Hollow Stem Auger | <b>Hammer Efficiency:</b> 86.4%                  |
| <b>Weather:</b>          | Not Available | <b>Auger Diameter:</b>     | 8 in. O.D.        | <b>Hammer Cal. Date:</b> 5/14/2019               |

| Depth (feet) | Graphical Log | FIELD EXPLORATION                                                                                                                          |                   |                                                                |                              |                       | LABORATORY RESULTS                                                                                                    |                    |                |                  |              |                                     |                              |
|--------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------------------------------------------------------|------------------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------|--------------------|----------------|------------------|--------------|-------------------------------------|------------------------------|
|              |               | Surface Condition: Grass & Weeds                                                                                                           | Sample Type       | Blow Counts(BC)=<br>Uncorr. Blows/6 in.<br>Pocket Pen(PP)= tsf | Recovery<br>(NR=No Recovery) | N <sub>60</sub> Value | Water<br>Content (%)                                                                                                  | Dry Unit Wt. (pcf) | Passing #4 (%) | Passing #200 (%) | Liquid Limit | Plasticity Index<br>(NP=NonPlastic) | Additional Tests/<br>Remarks |
|              |               | Lithologic Description                                                                                                                     |                   |                                                                |                              |                       |                                                                                                                       |                    |                |                  |              |                                     |                              |
|              |               | <b>Silty SAND (SM):</b> medium dense, brown, moist, fine-grained, non-plastic, pinholes                                                    |                   |                                                                |                              |                       |                                                                                                                       |                    |                |                  |              |                                     |                              |
|              |               |                                                                                                                                            |                   |                                                                |                              |                       |                                                                                                                       |                    |                |                  |              |                                     |                              |
| 5            |               |                                                                                                                                            | BC=18<br>19<br>20 |                                                                | 56                           | 4.8                   | 101.5                                                                                                                 |                    |                |                  |              |                                     |                              |
|              |               |                                                                                                                                            | BC=9<br>13<br>15  |                                                                | 40                           | 6.6                   | 94.9                                                                                                                  |                    |                |                  |              |                                     |                              |
| 10           |               | light brown                                                                                                                                | BC=11<br>7<br>7   |                                                                | 20                           |                       |                                                                                                                       |                    |                |                  |              |                                     |                              |
| 15           |               | dense                                                                                                                                      | BC=11<br>20<br>24 |                                                                | 63                           |                       |                                                                                                                       |                    |                |                  |              |                                     |                              |
| 20           |               | The boring was terminated at approximately 16.5 ft. below ground surface. The boring was backfilled with auger cuttings on April 21, 2020. |                   |                                                                |                              |                       | GROUNDWATER LEVEL INFORMATION:<br>Groundwater was not observed during drilling or after completion.<br>GENERAL NOTES: |                    |                |                  |              |                                     |                              |
| 25           |               |                                                                                                                                            |                   |                                                                |                              |                       |                                                                                                                       |                    |                |                  |              |                                     |                              |
| 30           |               |                                                                                                                                            |                   |                                                                |                              |                       |                                                                                                                       |                    |                |                  |              |                                     |                              |

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## BORING LOG B-5

PROPOSED HANFORD PLACE  
MEDICAL & MIXED-USE PROPERTY  
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|                          |               |                            |                   |                                                  |
|--------------------------|---------------|----------------------------|-------------------|--------------------------------------------------|
| <b>Date Begin - End:</b> | 4/21/2020     | <b>Drilling Company:</b>   | Moore Twining     | <b>BORING LOG B-6</b>                            |
| <b>Logged By:</b>        | J. Green      | <b>Drill Crew:</b>         |                   |                                                  |
| <b>Hor.-Vert. Datum:</b> | Not Available | <b>Drilling Equipment:</b> | CME-75            | <b>Hammer Type - Drop:</b> 140 lb. Auto - 30 in. |
| <b>Plunge:</b>           | -90 degrees   | <b>Drilling Method:</b>    | Hollow Stem Auger | <b>Hammer Efficiency:</b> 86.4%                  |
| <b>Weather:</b>          | Not Available | <b>Auger Diameter:</b>     | 8 in. O.D.        | <b>Hammer Cal. Date:</b> 5/14/2019               |

| Depth (feet) | Graphical Log | FIELD EXPLORATION                                                                                     |             |                                                                |                              |                       | LABORATORY RESULTS   |                    |                |                  |              |                                     |                                                                                         |
|--------------|---------------|-------------------------------------------------------------------------------------------------------|-------------|----------------------------------------------------------------|------------------------------|-----------------------|----------------------|--------------------|----------------|------------------|--------------|-------------------------------------|-----------------------------------------------------------------------------------------|
|              |               | Surface Condition: Grass & Weeds                                                                      | Sample Type | Blow Counts(BC)=<br>Uncorr. Blows/6 in.<br>Pocket Pen(PP)= tsf | Recovery<br>(NR=No Recovery) | N <sub>60</sub> Value | Water<br>Content (%) | Dry Unit Wt. (pcf) | Passing #4 (%) | Passing #200 (%) | Liquid Limit | Plasticity Index<br>(NP=NonPlastic) | Additional Tests/<br>Remarks                                                            |
|              |               | Lithologic Description                                                                                |             |                                                                |                              |                       |                      |                    |                |                  |              |                                     |                                                                                         |
|              |               | <b>Silty SAND (SM):</b> medium dense, brown, moist, fine-grained, non-plastic, pin holes and organics |             | BC=7<br>4<br>8                                                 |                              | 17                    | 5.0                  | 97.3               |                |                  |              |                                     | <b>ASTM D1557 Method A=</b><br>Max. Dry Unit Wt.: 121.8 pcf<br>Opt. Water Content: 9.8% |
| 5            |               |                                                                                                       |             | BC=3<br>5<br>6                                                 |                              | 16                    |                      |                    |                |                  |              |                                     |                                                                                         |
|              |               |                                                                                                       |             | BC=14<br>11<br>13                                              |                              | 35                    | 3.1                  | 95.9               |                |                  |              |                                     |                                                                                         |
| 10           |               | reddish brown                                                                                         |             | BC=2<br>2<br>4                                                 |                              | 9                     |                      |                    |                |                  |              |                                     |                                                                                         |
|              |               |                                                                                                       |             |                                                                |                              |                       |                      |                    |                |                  |              |                                     |                                                                                         |
| 15           |               | <b>Poorly Graded SAND (SP):</b> medium dense, grayish brown, moist                                    |             | BC=8<br>9<br>11                                                |                              | 29                    |                      |                    |                |                  |              |                                     |                                                                                         |
|              |               |                                                                                                       |             |                                                                |                              |                       |                      |                    |                |                  |              |                                     |                                                                                         |
| 20           |               | <b>Sandy SILT (ML):</b> stiff, dark brown, moist                                                      |             | BC=2<br>4<br>8                                                 |                              | 17                    |                      |                    |                | 70               |              |                                     |                                                                                         |
|              |               | <b>Poorly Graded SAND (SP):</b> medium dense, grayish brown, moist, fine-grained                      |             |                                                                |                              |                       |                      |                    |                |                  |              |                                     |                                                                                         |
| 25           |               |                                                                                                       |             | BC=13<br>8<br>25                                               |                              | 48                    | 1.9                  | 100.9              |                |                  |              |                                     |                                                                                         |
|              |               |                                                                                                       |             |                                                                |                              |                       |                      |                    |                |                  |              |                                     |                                                                                         |
| 30           |               | <b>SILTY CLAY (CL-ML):</b> medium stiff, dark gray, moist, medium plasticity                          |             | BC=7<br>8<br>10                                                |                              | 26                    |                      |                    |                |                  | 24           | 7                                   |                                                                                         |

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DATE: 6/4/2020

## BORING LOG B-6

PROPOSED HANFORD PLACE  
MEDICAL & MIXED-USE PROPERTY  
HANFORD, CALIFORNIA

## APPENDIX

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|                                                  |                                           |                       |
|--------------------------------------------------|-------------------------------------------|-----------------------|
| <b>Date Begin - End:</b> 4/21/2020               | <b>Drilling Company:</b> Moore Twining    | <b>BORING LOG B-6</b> |
| <b>Logged By:</b> J. Green                       | <b>Drill Crew:</b>                        |                       |
| <b>Hor.-Vert. Datum:</b> Not Available           | <b>Drilling Equipment:</b> CME-75         |                       |
| <b>Plunge:</b> -90 degrees                       | <b>Drilling Method:</b> Hollow Stem Auger |                       |
| <b>Weather:</b> Not Available                    | <b>Auger Diameter:</b> 8 in. O.D.         |                       |
| <b>Hammer Type - Drop:</b> 140 lb. Auto - 30 in. |                                           |                       |
| <b>Hammer Efficiency:</b> 86.4%                  |                                           |                       |
| <b>Hammer Cal. Date:</b> 5/14/2019               |                                           |                       |

| Depth (feet) | Graphical Log | FIELD EXPLORATION                                                                                                                          |             |                                                                |                              | LABORATORY RESULTS                                                                                                    |                      |                    |                |                  |              |                                     | Additional Tests/<br>Remarks |
|--------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------------------------------------------------|------------------------------|-----------------------------------------------------------------------------------------------------------------------|----------------------|--------------------|----------------|------------------|--------------|-------------------------------------|------------------------------|
|              |               | Surface Condition: Grass & Weeds                                                                                                           | Sample Type | Blow Counts(BC)=<br>Uncorr. Blows/6 in.<br>Pocket Pen(PP)= tsf | Recovery<br>(NR=No Recovery) | N <sub>60</sub> Value                                                                                                 | Water<br>Content (%) | Dry Unit Wt. (pcf) | Passing #4 (%) | Passing #200 (%) | Liquid Limit | Plasticity Index<br>(NP=NonPlastic) |                              |
|              |               |                                                                                                                                            |             | BC=9<br>13<br>25                                               |                              | 55                                                                                                                    |                      |                    |                |                  |              |                                     |                              |
|              |               | Poorly Graded SAND (SP): medium dense, light brownish gray, moist, fine-grained, non-plastic                                               |             |                                                                |                              |                                                                                                                       |                      |                    |                |                  |              |                                     |                              |
| 40           |               | Sandy SILTY CLAY (CL-ML): very stiff, dark gray, moist, low to medium plasticity, fine-grained sand                                        |             | BC=6<br>8<br>11                                                |                              | 27                                                                                                                    |                      |                    |                |                  | 26           | 7                                   |                              |
| 45           |               |                                                                                                                                            |             | BC=8<br>13<br>19                                               |                              | 46                                                                                                                    | 2.9                  | 99.6               |                |                  |              |                                     |                              |
| 50           |               |                                                                                                                                            |             | BC=11<br>12<br>14                                              |                              | 37                                                                                                                    |                      |                    |                |                  |              |                                     |                              |
| 55           |               | The boring was terminated at approximately 51.5 ft. below ground surface. The boring was backfilled with auger cuttings on April 21, 2020. |             |                                                                |                              | GROUNDWATER LEVEL INFORMATION:<br>Groundwater was not observed during drilling or after completion.<br>GENERAL NOTES: |                      |                    |                |                  |              |                                     |                              |
| 60           |               |                                                                                                                                            |             |                                                                |                              |                                                                                                                       |                      |                    |                |                  |              |                                     |                              |
| 65           |               |                                                                                                                                            |             |                                                                |                              |                                                                                                                       |                      |                    |                |                  |              |                                     |                              |

PROJECT NO.:  
20210045.001A

DRAWN BY: AA

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DATE: 6/4/2020

## BORING LOG B-6

PROPOSED HANFORD PLACE  
MEDICAL & MIXED-USE PROPERTY  
HANFORD, CALIFORNIA

APPENDIX

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|                          |               |                            |                   |                                                  |
|--------------------------|---------------|----------------------------|-------------------|--------------------------------------------------|
| <b>Date Begin - End:</b> | 4/20/2020     | <b>Drilling Company:</b>   | Moore Twining     | <b>BORING LOG B-7</b>                            |
| <b>Logged By:</b>        | J. Green      | <b>Drill Crew:</b>         |                   |                                                  |
| <b>Hor.-Vert. Datum:</b> | Not Available | <b>Drilling Equipment:</b> | CME-75            | <b>Hammer Type - Drop:</b> 140 lb. Auto - 30 in. |
| <b>Plunge:</b>           | -90 degrees   | <b>Drilling Method:</b>    | Hollow Stem Auger | <b>Hammer Efficiency:</b> 86.4%                  |
| <b>Weather:</b>          | Not Available | <b>Auger Diameter:</b>     | 8 in. O.D.        | <b>Hammer Cal. Date:</b> 5/14/2019               |

| Depth (feet) | Graphical Log | FIELD EXPLORATION                                                                                     |             |                                                                |                              |                       | LABORATORY RESULTS   |                    |                |                  |              |                                     |                                                                                         |
|--------------|---------------|-------------------------------------------------------------------------------------------------------|-------------|----------------------------------------------------------------|------------------------------|-----------------------|----------------------|--------------------|----------------|------------------|--------------|-------------------------------------|-----------------------------------------------------------------------------------------|
|              |               | Surface Condition: Grass & Weeds                                                                      | Sample Type | Blow Counts(BC)=<br>Uncorr. Blows/6 in.<br>Pocket Pen(PP)= tsf | Recovery<br>(NR=No Recovery) | N <sub>60</sub> Value | Water<br>Content (%) | Dry Unit Wt. (pcf) | Passing #4 (%) | Passing #200 (%) | Liquid Limit | Plasticity Index<br>(NP=NonPlastic) | Additional Tests/<br>Remarks                                                            |
|              |               | Lithologic Description                                                                                |             |                                                                |                              |                       |                      |                    |                |                  |              |                                     |                                                                                         |
|              |               | <b>Sandy SILT (ML):</b> light brown, moist, non-plastic, fine-grained sand                            |             |                                                                |                              |                       |                      |                    |                |                  |              |                                     | <b>ASTM D1557 Method A=</b><br>Max. Dry Unit Wt.: 124.8 pcf<br>Opt. Water Content: 8.5% |
|              |               | <b>Silty SAND (SM):</b> medium dense, light brown, moist, fine-grained, non-plastic to low plasticity |             | BC=28<br>15<br>25                                              |                              | 58                    | 4.5                  | 111.0              |                |                  |              |                                     |                                                                                         |
| 5            |               |                                                                                                       |             | BC=5<br>6<br>11                                                |                              | 24                    | 6.3                  | 94.6               |                |                  |              |                                     |                                                                                         |
|              |               |                                                                                                       |             | BC=7<br>9<br>12                                                |                              | 30                    | 7.9                  | 97.8               |                |                  |              |                                     |                                                                                         |
| 10           |               |                                                                                                       |             | BC=4<br>6<br>7                                                 |                              | 19                    |                      |                    |                |                  |              |                                     |                                                                                         |
|              |               |                                                                                                       |             |                                                                |                              |                       |                      |                    |                |                  |              |                                     |                                                                                         |
| 15           |               | <b>Poorly Graded SAND (SP):</b> medium dense, gray with light orange, moist, fine to medium-grained   |             | BC=5<br>2<br>2                                                 |                              | 6                     |                      |                    |                |                  |              |                                     |                                                                                         |
|              |               |                                                                                                       |             |                                                                |                              |                       |                      |                    |                |                  |              |                                     |                                                                                         |
| 20           |               | reddish brown                                                                                         |             | BC=10<br>13<br>11                                              |                              | 35                    |                      |                    |                |                  |              |                                     |                                                                                         |
|              |               |                                                                                                       |             |                                                                |                              |                       |                      |                    |                |                  |              |                                     |                                                                                         |
| 25           |               | <b>Lean CLAY (CL):</b> very stiff, gray, moist, medium plasticity, trace fine-grained sand            |             | BC=3<br>5<br>11                                                |                              | 23                    |                      |                    |                |                  |              |                                     |                                                                                         |
|              |               |                                                                                                       |             |                                                                |                              |                       |                      |                    |                |                  |              |                                     |                                                                                         |
| 30           |               | <b>Silty SAND (SM):</b> dense, brown, moist, fine-grained, non-plastic to low plasticity              |             | BC=24<br>26<br>34                                              |                              | 86                    | 11.6                 | 112.9              |                |                  |              |                                     |                                                                                         |
|              |               |                                                                                                       |             |                                                                |                              |                       |                      |                    |                |                  |              |                                     |                                                                                         |

PROJECT NO.:  
20210045.001A

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DATE: 6/4/2020

## BORING LOG B-7

PROPOSED HANFORD PLACE  
MEDICAL & MIXED-USE PROPERTY  
HANFORD, CALIFORNIA

## APPENDIX

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|                                                  |                                           |                       |
|--------------------------------------------------|-------------------------------------------|-----------------------|
| <b>Date Begin - End:</b> 4/20/2020               | <b>Drilling Company:</b> Moore Twining    | <b>BORING LOG B-7</b> |
| <b>Logged By:</b> J. Green                       | <b>Drill Crew:</b>                        |                       |
| <b>Hor.-Vert. Datum:</b> Not Available           | <b>Drilling Equipment:</b> CME-75         |                       |
| <b>Plunge:</b> -90 degrees                       | <b>Drilling Method:</b> Hollow Stem Auger |                       |
| <b>Weather:</b> Not Available                    | <b>Auger Diameter:</b> 8 in. O.D.         |                       |
| <b>Hammer Type - Drop:</b> 140 lb. Auto - 30 in. |                                           |                       |
| <b>Hammer Efficiency:</b> 86.4%                  |                                           |                       |
| <b>Hammer Cal. Date:</b> 5/14/2019               |                                           |                       |

| Depth (feet)                                                                                                                                                                                                                                                                                                                  | Graphical Log                                                                                            | FIELD EXPLORATION                                                              |                                                                                                        |                                                                 |                              |                       | LABORATORY RESULTS   |                    |                |                  |              |                                     |                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|------------------------------|-----------------------|----------------------|--------------------|----------------|------------------|--------------|-------------------------------------|------------------------------|
|                                                                                                                                                                                                                                                                                                                               |                                                                                                          | Surface Condition: Grass & Weeds                                               | Sample Type                                                                                            | Blow Counts (BC)=<br>Uncorr. Blows/6 in.<br>Pocket Pen(PP)= tsf | Recovery<br>(NR=No Recovery) | N <sub>60</sub> Value | Water<br>Content (%) | Dry Unit Wt. (pcf) | Passing #4 (%) | Passing #200 (%) | Liquid Limit | Plasticity Index<br>(NP=NonPlastic) | Additional Tests/<br>Remarks |
|                                                                                                                                                                                                                                                                                                                               |                                                                                                          | Lithologic Description                                                         |                                                                                                        |                                                                 |                              |                       |                      |                    |                |                  |              |                                     |                              |
|                                                                                                                                                                                                                                                                                                                               |                        | <b>Poorly Graded SAND (SP):</b> medium dense, light gray, moist, fine-grained  | <br>BC=11<br>13<br>16 |                                                                 | 42                           |                       |                      |                    |                |                  |              |                                     |                              |
| 40                                                                                                                                                                                                                                                                                                                            | <br>BC=20<br>25<br>31   | <b>Silty CLAY (CL-ML):</b> hard, light brown, moist, low plasticity            |                                                                                                        |                                                                 | 81                           |                       |                      |                    |                |                  |              |                                     |                              |
|                                                                                                                                                                                                                                                                                                                               |                                                                                                          | <b>Poorly Graded SAND (SP):</b> dense, light gray, moist, fine-grained         |                                                                                                        |                                                                 |                              |                       |                      |                    |                |                  |              |                                     |                              |
| 45                                                                                                                                                                                                                                                                                                                            | <br>BC=5<br>7<br>9      | wet                                                                            |                                                                                                        |                                                                 | 23                           |                       |                      |                    |                |                  |              |                                     |                              |
|                                                                                                                                                                                                                                                                                                                               |                                                                                                          | <b>Silty CLAY (CL-ML):</b> very stiff, dark greenish gray, wet, low plasticity |                                                                                                        |                                                                 |                              |                       |                      |                    |                |                  |              |                                     |                              |
| 50                                                                                                                                                                                                                                                                                                                            | <br>BC=10<br>11<br>15 |                                                                                |                                                                                                        |                                                                 | 37                           | 28.3                  |                      |                    |                |                  |              |                                     |                              |
| <p>The boring was terminated at approximately 51.5 ft. below ground surface. The boring was backfilled with auger cuttings on April 20, 2020.</p> <p><u>GROUNDWATER LEVEL INFORMATION:</u><br/>⊃ Perched groundwater was observed at approximately 45 ft. below ground surface during drilling.<br/><u>GENERAL NOTES:</u></p> |                                                                                                          |                                                                                |                                                                                                        |                                                                 |                              |                       |                      |                    |                |                  |              |                                     |                              |
| 55                                                                                                                                                                                                                                                                                                                            |                                                                                                          |                                                                                |                                                                                                        |                                                                 |                              |                       |                      |                    |                |                  |              |                                     |                              |
| 60                                                                                                                                                                                                                                                                                                                            |                                                                                                          |                                                                                |                                                                                                        |                                                                 |                              |                       |                      |                    |                |                  |              |                                     |                              |
| 65                                                                                                                                                                                                                                                                                                                            |                                                                                                          |                                                                                |                                                                                                        |                                                                 |                              |                       |                      |                    |                |                  |              |                                     |                              |

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DATE: 6/4/2020

## BORING LOG B-7

PROPOSED HANFORD PLACE  
MEDICAL & MIXED-USE PROPERTY  
HANFORD, CALIFORNIA

APPENDIX

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|                          |               |                            |                   |                                                  |
|--------------------------|---------------|----------------------------|-------------------|--------------------------------------------------|
| <b>Date Begin - End:</b> | 4/20/2020     | <b>Drilling Company:</b>   | Moore Twining     | <b>BORING LOG B-8</b>                            |
| <b>Logged By:</b>        | J. Green      | <b>Drill Crew:</b>         |                   |                                                  |
| <b>Hor.-Vert. Datum:</b> | Not Available | <b>Drilling Equipment:</b> | CME-75            | <b>Hammer Type - Drop:</b> 140 lb. Auto - 30 in. |
| <b>Plunge:</b>           | -90 degrees   | <b>Drilling Method:</b>    | Hollow Stem Auger | <b>Hammer Efficiency:</b> 86.4%                  |
| <b>Weather:</b>          | Not Available | <b>Auger Diameter:</b>     | 8 in. O.D.        | <b>Hammer Cal. Date:</b> 5/14/2019               |

| Depth (feet) | Graphical Log | FIELD EXPLORATION                                                                                                                          |             |                                                                |                              |                       | LABORATORY RESULTS                                                                                                                  |                    |                |                  |              |                                     |                                                                                                             |
|--------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------------------------------------------------|------------------------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------|------------------|--------------|-------------------------------------|-------------------------------------------------------------------------------------------------------------|
|              |               | Surface Condition: Grass & Weeds                                                                                                           | Sample Type | Blow Counts(BC)=<br>Uncorr. Blows/6 in.<br>Pocket Pen(PP)= tsf | Recovery<br>(NR=No Recovery) | N <sub>60</sub> Value | Water<br>Content (%)                                                                                                                | Dry Unit Wt. (pcf) | Passing #4 (%) | Passing #200 (%) | Liquid Limit | Plasticity Index<br>(NP=NonPlastic) | Additional Tests/<br>Remarks                                                                                |
|              |               | Lithologic Description                                                                                                                     |             |                                                                |                              |                       |                                                                                                                                     |                    |                |                  |              |                                     |                                                                                                             |
|              |               | <b>SILT (ML):</b> medium dense, light brown, moist, fine-grained, non-plastic to low plasticity, pinholes                                  |             | BC=9<br>11<br>12                                               |                              | 33                    | 5.1                                                                                                                                 | 100.3              |                |                  |              |                                     | <b>Direct Shear=</b><br>Peak Cohesion: 133.33 psf<br>Peak Friction Angle: 30.5°<br>Peak Tangent Angle: 0.57 |
| 5            |               | <b>Silty SAND (SM):</b> medium dense, light brown, moist, low plasticity, weakly to moderately cemented, pinholes                          |             | BC=9<br>11<br>15                                               |                              | 37                    |                                                                                                                                     |                    |                |                  |              |                                     |                                                                                                             |
|              |               | <b>Sandy SILT (ML):</b> very stiff, brown, moist, fine-grained, low plasticity                                                             |             | BC=18<br>21<br>17                                              |                              | 55                    | 2.4                                                                                                                                 | 99.5               |                |                  |              |                                     |                                                                                                             |
| 10           |               | stiff                                                                                                                                      |             | BC=4<br>4<br>5                                                 |                              | 13                    |                                                                                                                                     |                    |                |                  |              |                                     |                                                                                                             |
| 15           |               | <b>Sandy Lean CLAY (CL):</b> medium stiff, dark brown, moist, low to medium plasticity                                                     |             | BC=3<br>4<br>8                                                 |                              | 17                    | 20.6                                                                                                                                | 104.6              |                |                  |              |                                     |                                                                                                             |
| 20           |               | stiff, gray                                                                                                                                |             | BC=8<br>8<br>9                                                 |                              | 24                    |                                                                                                                                     |                    |                |                  |              |                                     |                                                                                                             |
| 25           |               |                                                                                                                                            |             | BC=7<br>10<br>25                                               |                              | 50                    |                                                                                                                                     |                    |                |                  |              |                                     |                                                                                                             |
| 30           |               | The boring was terminated at approximately 26.5 ft. below ground surface. The boring was backfilled with auger cuttings on April 20, 2020. |             |                                                                |                              |                       | <u>GROUNDWATER LEVEL INFORMATION:</u><br>Groundwater was not observed during drilling or after completion.<br><u>GENERAL NOTES:</u> |                    |                |                  |              |                                     |                                                                                                             |

PROJECT NO.:  
20210045.001A

DRAWN BY: AA

CHECKED BY: ES

DATE: 6/4/2020

## BORING LOG B-8

PROPOSED HANFORD PLACE  
MEDICAL & MIXED-USE PROPERTY  
HANFORD, CALIFORNIA

APPENDIX

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|                                        |                                           |                                                  |
|----------------------------------------|-------------------------------------------|--------------------------------------------------|
| <b>Date Begin - End:</b> 4/20/2020     | <b>Drilling Company:</b> Moore Twining    | <b>BORING LOG B-9</b>                            |
| <b>Logged By:</b> J. Green             | <b>Drill Crew:</b>                        |                                                  |
| <b>Hor.-Vert. Datum:</b> Not Available | <b>Drilling Equipment:</b> CME-75         | <b>Hammer Type - Drop:</b> 140 lb. Auto - 30 in. |
| <b>Plunge:</b> -90 degrees             | <b>Drilling Method:</b> Hollow Stem Auger | <b>Hammer Efficiency:</b> 86.4%                  |
| <b>Weather:</b> Not Available          | <b>Auger Diameter:</b> 8 in. O.D.         | <b>Hammer Cal. Date:</b> 5/14/2019               |

| Depth (feet) | Graphical Log | FIELD EXPLORATION                                                                                                                          |                                          |                                                                |                              |                       | LABORATORY RESULTS                                                                                                    |                    |                |                  |              |                                     |                              |
|--------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|----------------------------------------------------------------|------------------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------|--------------------|----------------|------------------|--------------|-------------------------------------|------------------------------|
|              |               | Surface Condition: Grass & Weeds                                                                                                           | Sample Type                              | Blow Counts(BC)=<br>Uncorr. Blows/6 in.<br>Pocket Pen(PP)= tsf | Recovery<br>(NR=No Recovery) | N <sub>60</sub> Value | Water<br>Content (%)                                                                                                  | Dry Unit Wt. (pcf) | Passing #4 (%) | Passing #200 (%) | Liquid Limit | Plasticity Index<br>(NP=NonPlastic) | Additional Tests/<br>Remarks |
|              |               | Lithologic Description                                                                                                                     |                                          |                                                                |                              |                       |                                                                                                                       |                    |                |                  |              |                                     |                              |
|              |               | <b>Sandy SILT (ML):</b> very stiff, grayish brown, moist, non-plastic                                                                      |                                          |                                                                |                              |                       |                                                                                                                       |                    |                |                  |              |                                     |                              |
|              |               |                                                                                                                                            | <div><div></div></div> BC=9<br>12<br>17  |                                                                | 42                           | 7.1                   | 92.0                                                                                                                  |                    | 57             |                  |              |                                     | Consolidation                |
| 5            |               | <b>Silty SAND (SM):</b> medium dense, grayish brown, moist, fine-grained, non-plastic                                                      | <div><div></div></div> BC=7<br>7<br>9    |                                                                | 23                           |                       |                                                                                                                       |                    |                |                  |              |                                     |                              |
| 10           |               | brown                                                                                                                                      | <div><div></div></div> BC=7<br>18<br>23  |                                                                | 59                           |                       |                                                                                                                       |                    |                |                  |              |                                     |                              |
| 15           |               | reddish brown                                                                                                                              | <div><div></div></div> BC=6<br>6<br>11   |                                                                | 24                           |                       |                                                                                                                       |                    |                |                  |              |                                     |                              |
| 20           |               | <b>Poorly Graded SAND (SP):</b> dense, gray, moist, fine-grained, non-plastic                                                              | <div><div></div></div> BC=25<br>26<br>28 |                                                                | 78                           |                       |                                                                                                                       |                    |                |                  |              |                                     |                              |
| 25           |               | The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on April 20, 2020. |                                          |                                                                |                              |                       | GROUNDWATER LEVEL INFORMATION:<br>Groundwater was not observed during drilling or after completion.<br>GENERAL NOTES: |                    |                |                  |              |                                     |                              |
| 30           |               |                                                                                                                                            |                                          |                                                                |                              |                       |                                                                                                                       |                    |                |                  |              |                                     |                              |

|                                                                  |                               |                                                                               |              |
|------------------------------------------------------------------|-------------------------------|-------------------------------------------------------------------------------|--------------|
| <br><b>KLEINFELDER</b><br><i>Bright People. Right Solutions.</i> | PROJECT NO.:<br>20210045.001A | <b>BORING LOG B-9</b>                                                         | APPENDIX     |
|                                                                  | DRAWN BY: AA                  | PROPOSED HANFORD PLACE<br>MEDICAL & MIXED-USE PROPERTY<br>HANFORD, CALIFORNIA | <b>A-11</b>  |
|                                                                  | CHECKED BY: ES                |                                                                               |              |
|                                                                  | DATE: 6/4/2020                |                                                                               | PAGE: 1 of 1 |

## APPENDIX B

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|                    |           |
|--------------------|-----------|
| Laboratory Summary | B-1/B-2   |
| Sieve Analysis     | B-3       |
| Atterberg Limits   | B-4       |
| Direct Shear       | B-5/B-6   |
| Collapse Potential | B-7/B-10  |
| Resistance Value   | B-11/B-17 |

| Exploration ID | Depth (ft.) | Sample Description       | Water Content (%) | Dry Unit Wt. (pcf) | Sieve Analysis (%) |            |              | Atterberg Limits |               |                  | Additional Tests                   |
|----------------|-------------|--------------------------|-------------------|--------------------|--------------------|------------|--------------|------------------|---------------|------------------|------------------------------------|
|                |             |                          |                   |                    | Passing 3/4"       | Passing #4 | Passing #200 | Liquid Limit     | Plastic Limit | Plasticity Index |                                    |
| B-1            | 3.0         | SILTY SAND (SM)          | 2.4               | 108.6              |                    |            |              |                  |               |                  |                                    |
| B-1            | 5.0         | SANDY SILT (ML)          | 4.8               | 88.1               |                    |            |              |                  |               |                  |                                    |
| B-1            | 6.0         | SANDY SILT (ML)          | 4.7               | 106.4              |                    |            |              |                  |               |                  | Consolidation                      |
| B-1            | 17.0        | SANDY SILT (ML)          | 10.9              | 107.9              |                    |            |              |                  |               |                  |                                    |
| B-2            | 2.0         | SANDY SILT (ML)          |                   |                    |                    |            | 60           |                  |               |                  |                                    |
| B-2            | 10.0        | SILTY SAND (SM)          | 6.5               | 98.8               |                    |            |              |                  |               |                  |                                    |
| B-3            | 1.0         | SILTY SAND (SM)          | 6.9               | 96.8               |                    |            |              |                  |               |                  | Consolidation                      |
| B-3            | 1.5         | SILTY SAND (SM)          |                   |                    |                    |            |              |                  |               |                  | Direct Shear=                      |
|                |             |                          |                   |                    |                    |            |              |                  |               |                  | Peak Cohesion: 740 psf             |
|                |             |                          |                   |                    |                    |            |              |                  |               |                  | Peak Friction Angle: 27.0°         |
|                |             |                          |                   |                    |                    |            |              |                  |               |                  | Peak Tangent Angle: 0.52           |
| B-3            | 5.0         | SILTY SAND (SM)          | 3.2               | 96.0               |                    |            |              |                  |               |                  |                                    |
| B-4            | 5.0         | SILTY SAND (SM)          | 3.5               | 95.5               |                    |            |              |                  |               |                  |                                    |
| B-5            | 3.0         | SILTY SAND (SM)          | 4.8               | 101.5              |                    |            |              |                  |               |                  |                                    |
| B-5            | 5.0         | SILTY SAND (SM)          | 6.6               | 94.9               |                    |            |              |                  |               |                  |                                    |
| B-6            | 0.0 - 0.5   | SILTY SAND (SM)          |                   |                    |                    |            |              |                  |               |                  | ASTM D1557 Method A=               |
|                |             |                          |                   |                    |                    |            |              |                  |               |                  | Maximum Dry Unit Weight: 121.8 pcf |
|                |             |                          |                   |                    |                    |            |              |                  |               |                  | Optimum Water Content: 9.8%        |
| B-6            | 2.0         | SILTY SAND (SM)          | 5.0               | 97.3               |                    |            |              |                  |               |                  |                                    |
| B-6            | 7.5         | SILTY SAND (SM)          | 3.1               | 95.9               |                    |            |              |                  |               |                  |                                    |
| B-6            | 20.0        | SANDY SILT (ML)          |                   |                    |                    |            | 70           |                  |               |                  |                                    |
| B-6            | 25.0        | POORLY GRADED SAND (SP)  | 1.9               | 100.9              |                    |            |              |                  |               |                  |                                    |
| B-6            | 30.0        | SILTY CLAY (CL-ML)       |                   |                    |                    |            |              | 24               | 17            | 7                |                                    |
| B-6            | 40.0        | SANDY SILTY CLAY (CL-ML) |                   |                    |                    |            |              | 26               | 19            | 7                |                                    |
| B-6            | 45.0        | SANDY SILTY CLAY (CL-ML) | 2.9               | 99.6               |                    |            |              |                  |               |                  |                                    |
| B-7            | 0.0 - 2.0   | SANDY SILT (ML)          |                   |                    |                    |            |              |                  |               |                  | ASTM D1557 Method A=               |
|                |             |                          |                   |                    |                    |            |              |                  |               |                  | Maximum Dry Unit Weight: 124.8 pcf |
|                |             |                          |                   |                    |                    |            |              |                  |               |                  | Optimum Water Content: 8.5%        |

Refer to the Geotechnical Evaluation Report or the supplemental plates for the method used for the testing performed above.  
NP = NonPlastic



PROJECT NO.:  
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DATE:

### LABORATORY TEST RESULT SUMMARY

PROPOSED HANFORD PLACE  
MEDICAL & MIXED-USE PROPERTY  
HANFORD, CALIFORNIA

APPENDIX

B-1

| Exploration ID | Depth (ft.) | Sample Description   | Water Content (%) | Dry Unit Wt. (pcf) | Sieve Analysis (%) |            |              | Atterberg Limits |               |                  | Additional Tests           |
|----------------|-------------|----------------------|-------------------|--------------------|--------------------|------------|--------------|------------------|---------------|------------------|----------------------------|
|                |             |                      |                   |                    | Passing 3/4"       | Passing #4 | Passing #200 | Liquid Limit     | Plastic Limit | Plasticity Index |                            |
| B-7            | 2.0         | SILTY SAND (SM)      | 4.5               | 111.0              |                    |            |              |                  |               |                  |                            |
| B-7            | 6.0         | SILTY SAND (SM)      | 6.3               | 94.6               |                    |            |              |                  |               |                  |                            |
| B-7            | 7.5         | SILTY SAND (SM)      | 7.9               | 97.8               |                    |            |              |                  |               |                  | Consolidation              |
| B-7            | 30.0        | SILTY SAND (SM)      | 11.6              | 112.9              |                    |            |              |                  |               |                  |                            |
| B-7            | 50.0        | SILTY CLAY (CL-ML)   | 28.3              |                    |                    |            |              |                  |               |                  |                            |
| B-8            | 2.0         | SILT (ML)            | 5.1               | 100.3              |                    |            |              |                  |               |                  | Direct Shear=              |
|                |             |                      |                   |                    |                    |            |              |                  |               |                  | Peak Cohesion: 133.33 psf  |
|                |             |                      |                   |                    |                    |            |              |                  |               |                  | Peak Friction Angle: 30.5° |
|                |             |                      |                   |                    |                    |            |              |                  |               |                  | Peak Tangent Angle: 0.57   |
| B-8            | 7.5         | SANDY SILT (ML)      | 2.4               | 99.5               |                    |            |              |                  |               |                  |                            |
| B-8            | 15.0        | SANDY LEAN CLAY (CL) | 20.6              | 104.6              |                    |            |              |                  |               |                  |                            |
| B-9            | 2.0         | SANDY SILT (ML)      | 7.1               | 92.0               |                    |            | 57           |                  |               |                  | Consolidation              |
| RV-1           | 0.0 - 3.0   | SILTY SAND (SM)      |                   |                    |                    |            |              |                  |               |                  | R-Value= 70                |
| RV-2           | 0.0 - 3.0   | SILTY SAND (SM)      |                   |                    |                    |            |              |                  |               |                  | R-Value= 63                |
| RV-3           | 0.0 - 3.0   | SANDY SILT (ML)      |                   |                    |                    |            |              |                  |               |                  | R-Value= 41                |
| RV-4           | 0.0 - 3.0   | SANDY SILT (ML)      |                   |                    |                    |            |              |                  |               |                  | R-Value= 53                |
| RV-5           | 0.0 - 3.0   | SILT (ML)            |                   |                    |                    |            |              |                  |               |                  | R-Value= 14                |
| RV-6           | 0.0 - 3.0   | SILTY SAND (SM)      |                   |                    |                    |            |              |                  |               |                  | R-Value= 62                |
| RV-7           | 0.0 - 3.0   | SANDY SILT (ML)      |                   |                    |                    |            |              |                  |               |                  | R-Value= 21                |

Refer to the Geotechnical Evaluation Report or the supplemental plates for the method used for the testing performed above.  
NP = NonPlastic



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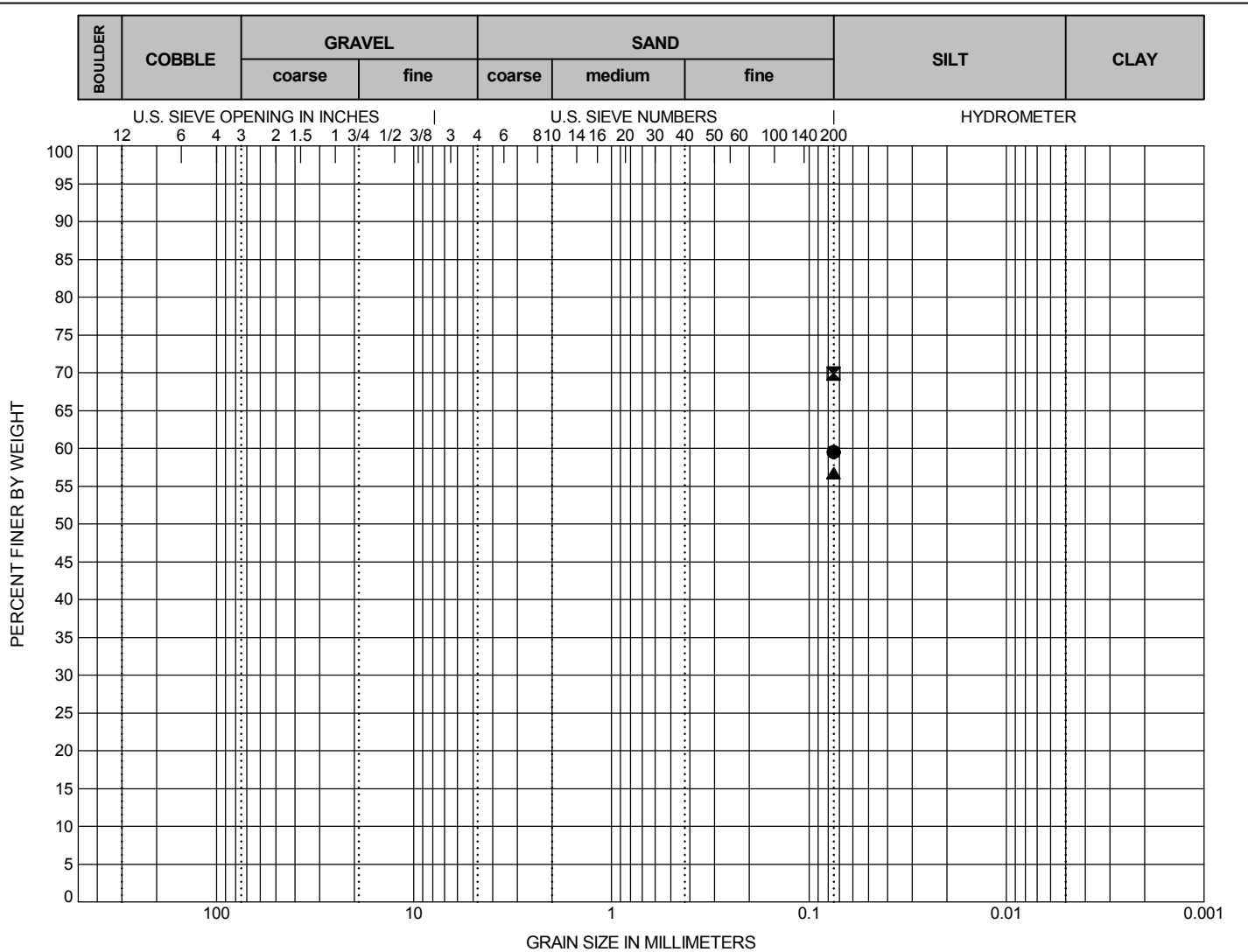
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## LABORATORY TEST RESULT SUMMARY

PROPOSED HANFORD PLACE  
MEDICAL & MIXED-USE PROPERTY  
HANFORD, CALIFORNIA

APPENDIX

**B-2**



| Exploration ID |     | Depth (ft.) | Sample Description |                 |                 |                 |    |    |              |            | LL           | PL    | PI    |
|----------------|-----|-------------|--------------------|-----------------|-----------------|-----------------|----|----|--------------|------------|--------------|-------|-------|
| ●              | B-2 | 2           | SANDY SILT (ML)    |                 |                 |                 |    |    |              |            | NM           | NM    | NM    |
| ☒              | B-6 | 20          | SANDY SILT (ML)    |                 |                 |                 |    |    |              |            | NM           | NM    | NM    |
| ▲              | B-9 | 2           | SANDY SILT (ML)    |                 |                 |                 |    |    |              |            | NM           | NM    | NM    |
|                |     |             |                    |                 |                 |                 |    |    |              |            |              |       |       |
|                |     |             |                    |                 |                 |                 |    |    |              |            |              |       |       |
| Exploration ID |     | Depth (ft.) | D <sub>100</sub>   | D <sub>60</sub> | D <sub>30</sub> | D <sub>10</sub> | Cc | Cu | Passing 3/4" | Passing #4 | Passing #200 | %Silt | %Clay |
| ●              | B-2 | 2           | 0.075              | NM              | NM              | NM              | NM | NM |              |            | 60           | NM    | NM    |
| ☒              | B-6 | 20          | 0.075              | NM              | NM              | NM              | NM | NM |              |            | 70           | NM    | NM    |
| ▲              | B-9 | 2           | 0.075              | NM              | NM              | NM              | NM | NM |              |            | 57           | NM    | NM    |
|                |     |             |                    |                 |                 |                 |    |    |              |            |              |       |       |
|                |     |             |                    |                 |                 |                 |    |    |              |            |              |       |       |

Sieve Analysis and Hydrometer Analysis testing performed in general accordance with ASTM D6913 (Sieve Analysis) and ASTM D7928 (Hydrometer Analysis).  
 NP = Nonplastic  
 NM = Not Measured

Coefficients of Uniformity -  $C_u = D_{60} / D_{10}$   
 Coefficients of Curvature -  $C_c = (D_{30})^2 / D_{60} D_{10}$   
 D<sub>60</sub> = Grain diameter at 60% passing  
 D<sub>30</sub> = Grain diameter at 30% passing  
 D<sub>10</sub> = Grain diameter at 10% passing

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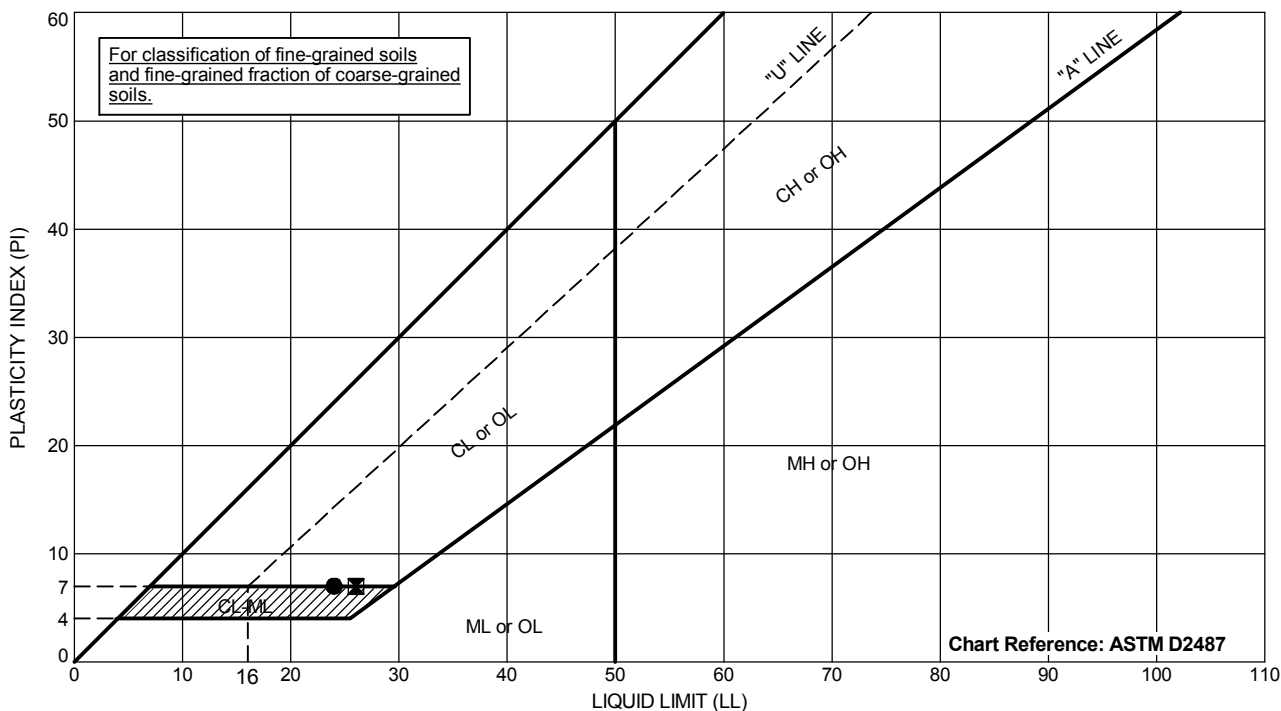
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SIEVE ANALYSIS

PROPOSED HANFORD PLACE  
MEDICAL & MIXED-USE PROPERTY  
HANFORD, CALIFORNIA

APPENDIX

B-3



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PROJECT NUMBER: 20210045.001A  
GINT TEMPLATE: E:\KLF\_STANDARD\_GINT\_LIBRARY\_2021.GLB [KLF\_ATTERBERG (ASTM)]

| Exploration ID | Depth (ft.) | Sample Description       | Passing #200 | LL | PL | PI |
|----------------|-------------|--------------------------|--------------|----|----|----|
| ● B-6          | 30          | SILTY CLAY (CL-ML)       | NM           | 24 | 17 | 7  |
| ☒ B-6          | 40          | SANDY SILTY CLAY (CL-ML) | NM           | 26 | 19 | 7  |
|                |             |                          |              |    |    |    |
|                |             |                          |              |    |    |    |
|                |             |                          |              |    |    |    |
|                |             |                          |              |    |    |    |
|                |             |                          |              |    |    |    |
|                |             |                          |              |    |    |    |
|                |             |                          |              |    |    |    |
|                |             |                          |              |    |    |    |
|                |             |                          |              |    |    |    |
|                |             |                          |              |    |    |    |
|                |             |                          |              |    |    |    |
|                |             |                          |              |    |    |    |
|                |             |                          |              |    |    |    |
|                |             |                          |              |    |    |    |
|                |             |                          |              |    |    |    |
|                |             |                          |              |    |    |    |
|                |             |                          |              |    |    |    |
|                |             |                          |              |    |    |    |
|                |             |                          |              |    |    |    |

Testing performed in general accordance with ASTM D4318.  
NP = Nonplastic  
NM = Not Measured



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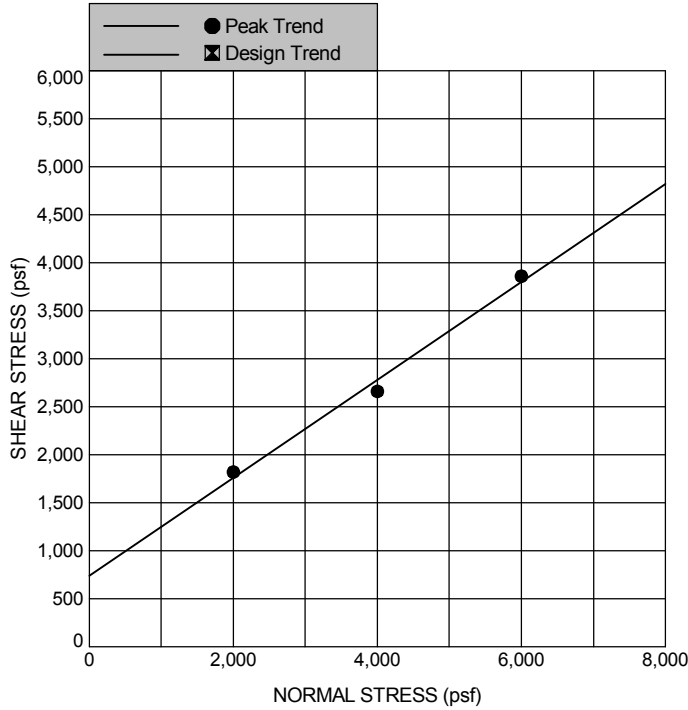
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ATTERBERG LIMITS

PROPOSED HANFORD PLACE  
MEDICAL & MIXED-USE PROPERTY  
HANFORD, CALIFORNIA

APPENDIX

B-4



| Exploration ID |                         | Depth (ft.)       | Sample Description        |                       |                              |                         |                      |
|----------------|-------------------------|-------------------|---------------------------|-----------------------|------------------------------|-------------------------|----------------------|
| B-3            |                         | 1.5               | SILTY SAND (SM)           |                       |                              |                         |                      |
| Passing #4 (%) |                         | Passing #200 (%)  |                           | Liquid Limit          | Plastic Limit                | Plasticity Index        | Specific Gravity     |
| NM             |                         | NM                |                           | NM                    | NM                           | NM                      | 2.65                 |
| Initial        | Specimen No.            | Water Content (%) | Dry Unit Weight (pcf)     | Saturation (%)        | Void Ratio                   | Area (in <sup>2</sup> ) | Height (in)          |
|                | 1                       | 6.1               | 94.7                      | 21.6                  | 0.746                        | 4.60                    | 0.96                 |
|                | 2                       | 6.2               | 95.6                      | 22.5                  | 0.730                        | 4.60                    | 0.96                 |
|                | 3                       | 7.0               | 95.5                      | 25.5                  | 0.731                        | 4.60                    | 0.96                 |
| At Test        | Specimen No.            | Water Content (%) | Dry Unit Weight (pcf)     | Saturation (%)        | Void Ratio                   | Area (in <sup>2</sup> ) | Height (in)          |
|                | 1                       | 25.3              | 105.5                     | 26.7                  | 0.621                        | 4.60                    | 0.89                 |
|                | 2                       | 23.8              | 111.4                     | 26.5                  | 0.559                        | 4.60                    | 0.87                 |
|                | 3                       | 22.7              | 111.7                     | 25.4                  | 0.539                        | 4.60                    | 0.85                 |
| Specimen No.   | Peak Shear Stress (psf) |                   | Design Shear Stress (psf) |                       | Horizontal Displacement (in) | Normal Stress (psf)     | Strain Rate (in/min) |
| 1              | 1820                    |                   |                           |                       | 0.2600                       | 2000                    | 0.002                |
| 2              | 2660                    |                   |                           |                       | 0.4000                       | 4000                    | 0.002                |
| 3              | 3860                    |                   |                           |                       | 0.2600                       | 6000                    | 0.002                |
| Results        | Cohesion (psf)          |                   |                           | Friction $\phi$ (deg) |                              | Tan $\delta$ (deg)      |                      |
| Peak           | 740                     |                   |                           | 27.02                 |                              | 0.52                    |                      |
| Design         |                         |                   |                           |                       |                              |                         |                      |

Testing performed in general accordance with ASTM D3080.  
 NP = Nonplastic  
 NM = Not Measured



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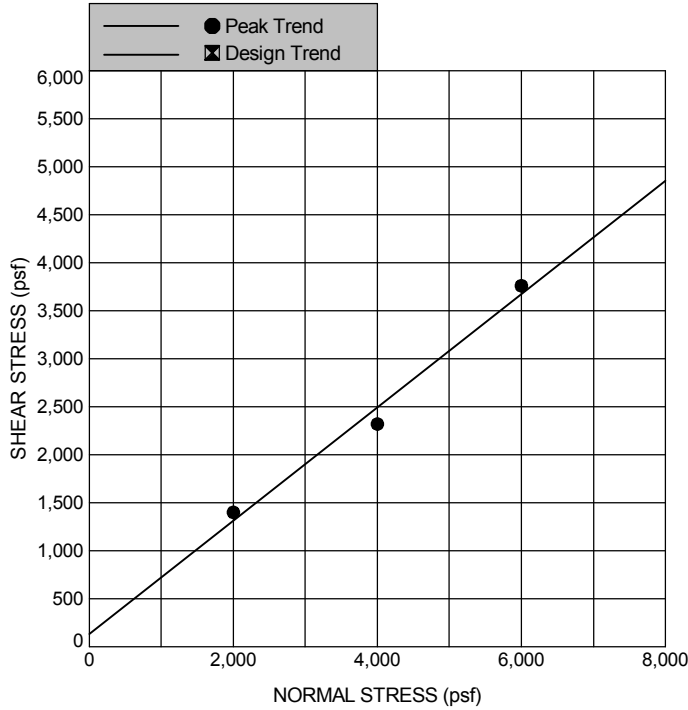
DIRECT SHEAR

PROPOSED HANFORD PLACE  
 MEDICAL & MIXED-USE PROPERTY  
 HANFORD, CALIFORNIA

APPENDIX

B-5





| Exploration ID |              | Depth (ft.)             | Sample Description    |                           |                              |                         |                      |
|----------------|--------------|-------------------------|-----------------------|---------------------------|------------------------------|-------------------------|----------------------|
| B-8            |              | 2                       | SILT (ML)             |                           |                              |                         |                      |
| Passing #4 (%) |              | Passing #200 (%)        |                       | Liquid Limit              | Plastic Limit                | Plasticity Index        | Specific Gravity     |
| NM             |              | NM                      |                       | NM                        | NM                           | NM                      | 2.65                 |
| Initial        | Specimen No. | Water Content (%)       | Dry Unit Weight (pcf) | Saturation (%)            | Void Ratio                   | Area (in <sup>2</sup> ) | Height (in)          |
|                | 1            | 6.2                     | 98.6                  | 24.4                      | 0.677                        | 4.60                    | 0.96                 |
|                | 2            | 5.4                     | 96.6                  | 20.3                      | 0.711                        | 4.60                    | 0.96                 |
|                | 3            | 5.6                     | 101.3                 | 23.3                      | 0.633                        | 4.60                    | 0.96                 |
| At Test        | Specimen No. | Water Content (%)       | Dry Unit Weight (pcf) | Saturation (%)            | Void Ratio                   | Area (in <sup>2</sup> ) | Height (in)          |
|                | 1            | 22.4                    | 108.6                 |                           | 0.591                        | 4.60                    | 0.97                 |
|                | 2            | 22.2                    | 112.9                 |                           | 0.530                        | 4.60                    | 0.86                 |
|                | 3            | 20.9                    | 116.3                 |                           | 0.497                        | 4.60                    | 0.88                 |
|                |              |                         |                       |                           |                              |                         |                      |
| Specimen No.   |              | Peak Shear Stress (psf) |                       | Design Shear Stress (psf) | Horizontal Displacement (in) | Normal Stress (psf)     | Strain Rate (in/min) |
| 1              |              | 1400                    |                       |                           | 0.4000                       | 2000                    | 0.002                |
| 2              |              | 2320                    |                       |                           | 0.4000                       | 4000                    | 0.002                |
| 3              |              | 3760                    |                       |                           | 0.3800                       | 6000                    | 0.002                |
| Results        |              | Cohesion (psf)          |                       | Friction $\phi$ (deg)     |                              | Tan $\phi$ (deg)        |                      |
| Peak           |              | 133.33                  |                       | 30.54                     |                              | 0.57                    |                      |
| Design         |              |                         |                       |                           |                              |                         |                      |

Testing performed in general accordance with ASTM D3080.  
 NP = Nonplastic  
 NM = Not Measured



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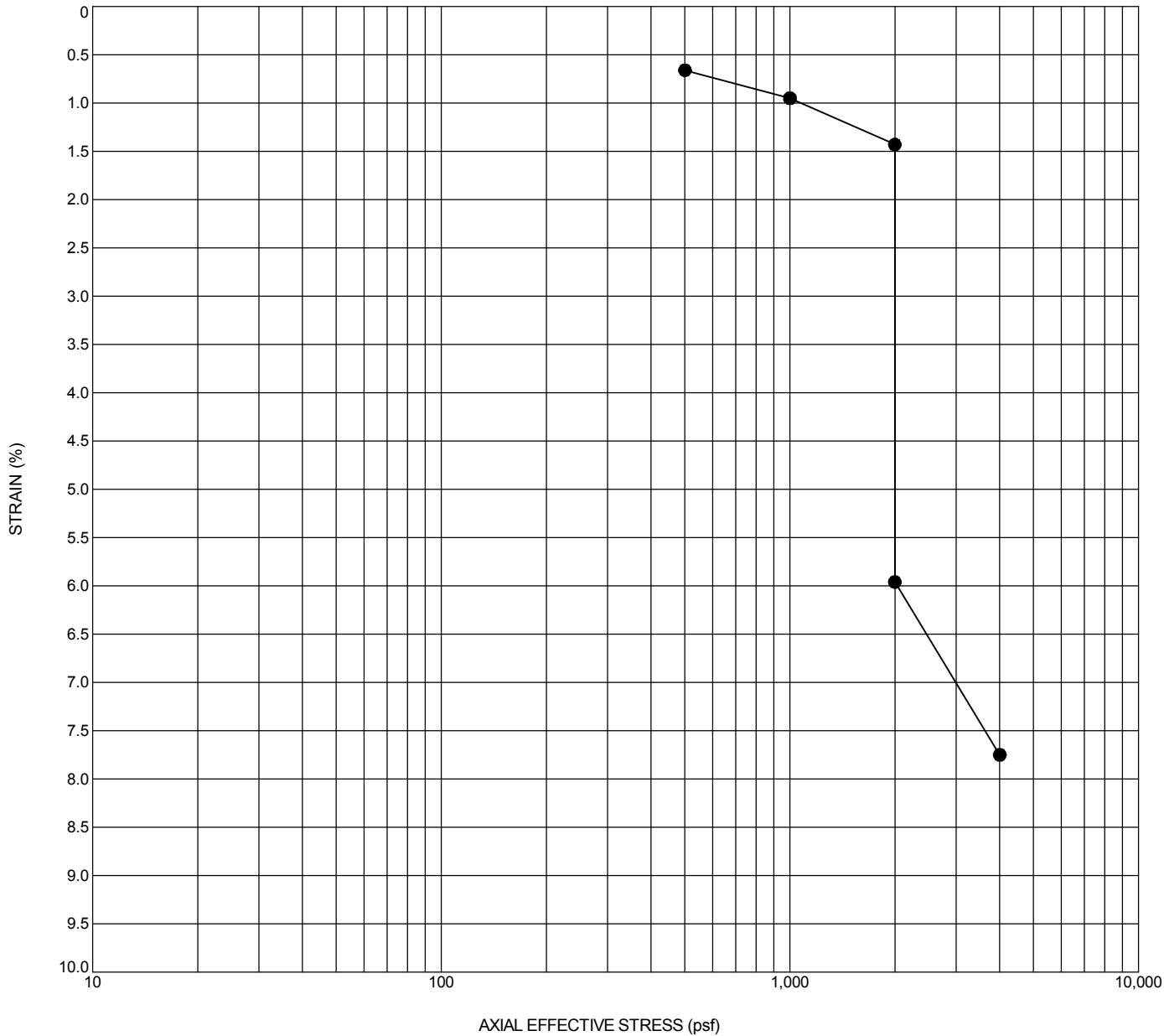
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DIRECT SHEAR

PROPOSED HANFORD PLACE  
 MEDICAL & MIXED-USE PROPERTY  
 HANFORD, CALIFORNIA

APPENDIX

B-6



| Exploration ID |                       | Depth (ft.)          | Sample Description |                   |                    |                    |                |            |                            |              |    |    |    |
|----------------|-----------------------|----------------------|--------------------|-------------------|--------------------|--------------------|----------------|------------|----------------------------|--------------|----|----|----|
| B-1            |                       | 6                    | SANDY SILT (ML)    |                   |                    |                    |                |            |                            |              |    |    |    |
|                | Sample Condition Type | Sample Diameter (mm) | Height (mm)        | Water Content (%) | Dry Unit Wt. (pcf) | Wet Unit Wt. (pcf) | Saturation (%) | Void Ratio | Specific Gravity (Assumed) | Passing #200 | LL | PL | PI |
| Initial        |                       | 2.4                  | 25.4               | 4.7               | 106.4              | 111.4              | 4.7            | 0.880      | 2.65                       | NM           | NM | NM | NM |
| Final          |                       | NM                   | 0.9                | 20.7              | 111.3              | 134.3              | 20.7           | 0.730      | 2.65                       |              |    |    |    |

Testing performed in general accordance with ASTM D2435 Method A.  
NP = Nonplastic  
NM = Not Measured



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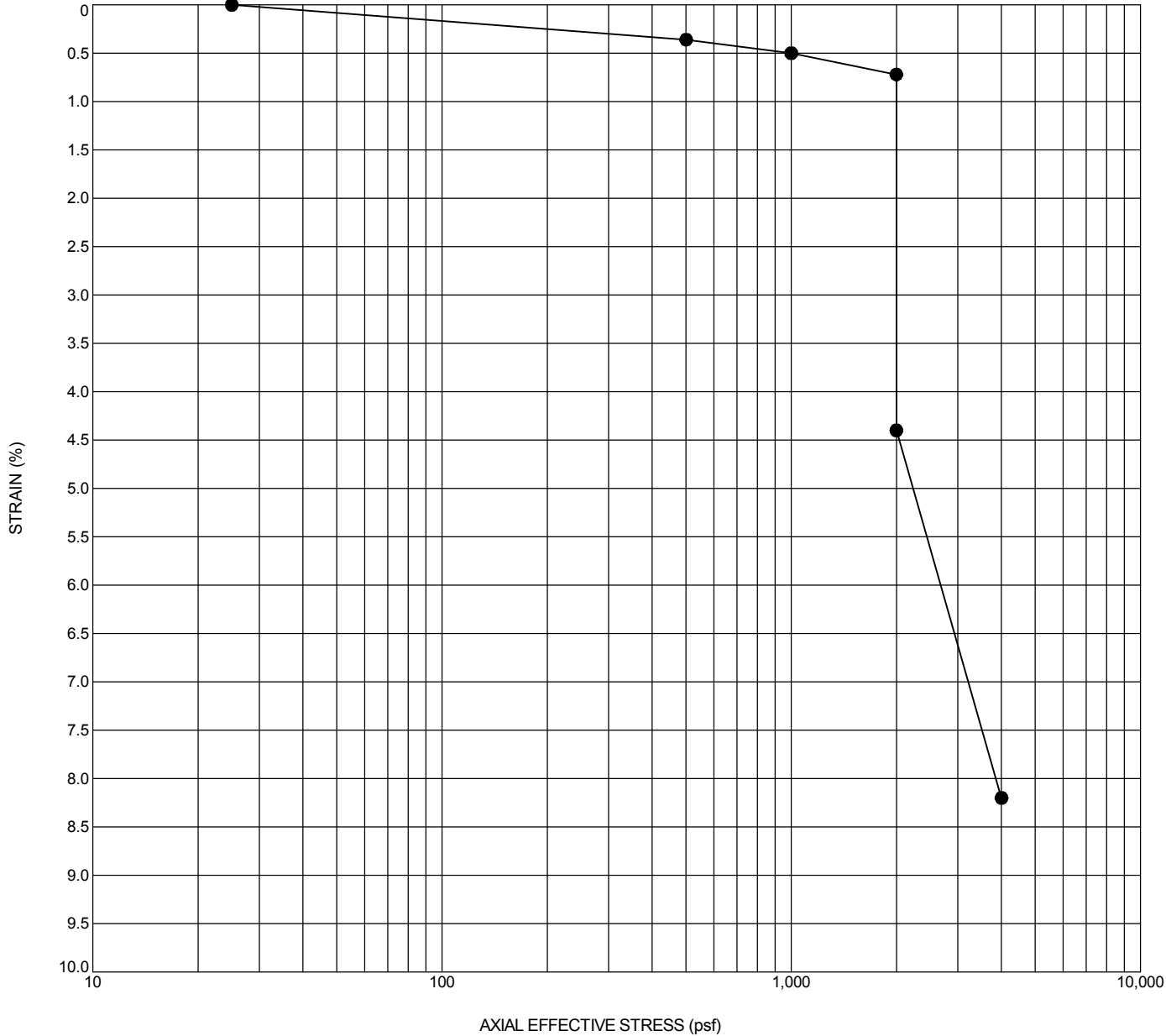
ONE DIMENSIONAL  
CONSOLIDATION TEST

PROPOSED HANFORD PLACE  
MEDICAL & MIXED-USE PROPERTY  
HANFORD, CALIFORNIA

APPENDIX

B-7

PAGE: 1 of 2



| Exploration ID |                       | Depth (ft.)          |             | Sample Description |                    |                    |                |            |                            |              |    |    |    |
|----------------|-----------------------|----------------------|-------------|--------------------|--------------------|--------------------|----------------|------------|----------------------------|--------------|----|----|----|
| B-3            |                       | 1                    |             | SILTY SAND (SM)    |                    |                    |                |            |                            |              |    |    |    |
|                | Sample Condition Type | Sample Diameter (mm) | Height (mm) | Water Content (%)  | Dry Unit Wt. (pcf) | Wet Unit Wt. (pcf) | Saturation (%) | Void Ratio | Specific Gravity (Assumed) | Passing #200 | LL | PL | PI |
| Initial        |                       | 61.5                 | 25.4        | 6.9                | 96.8               | 103.4              | 25.7           | 0.710      | 2.65                       | NM           | NM | NM | NM |
| Final          |                       | 61.5                 | 25.4        | 21.2               | 104.3              | 126.4              | 97.0           | 0.570      | 2.65                       |              |    |    |    |

Testing performed in general accordance with ASTM D2435 Method A.  
NP = Nonplastic  
NM = Not Measured



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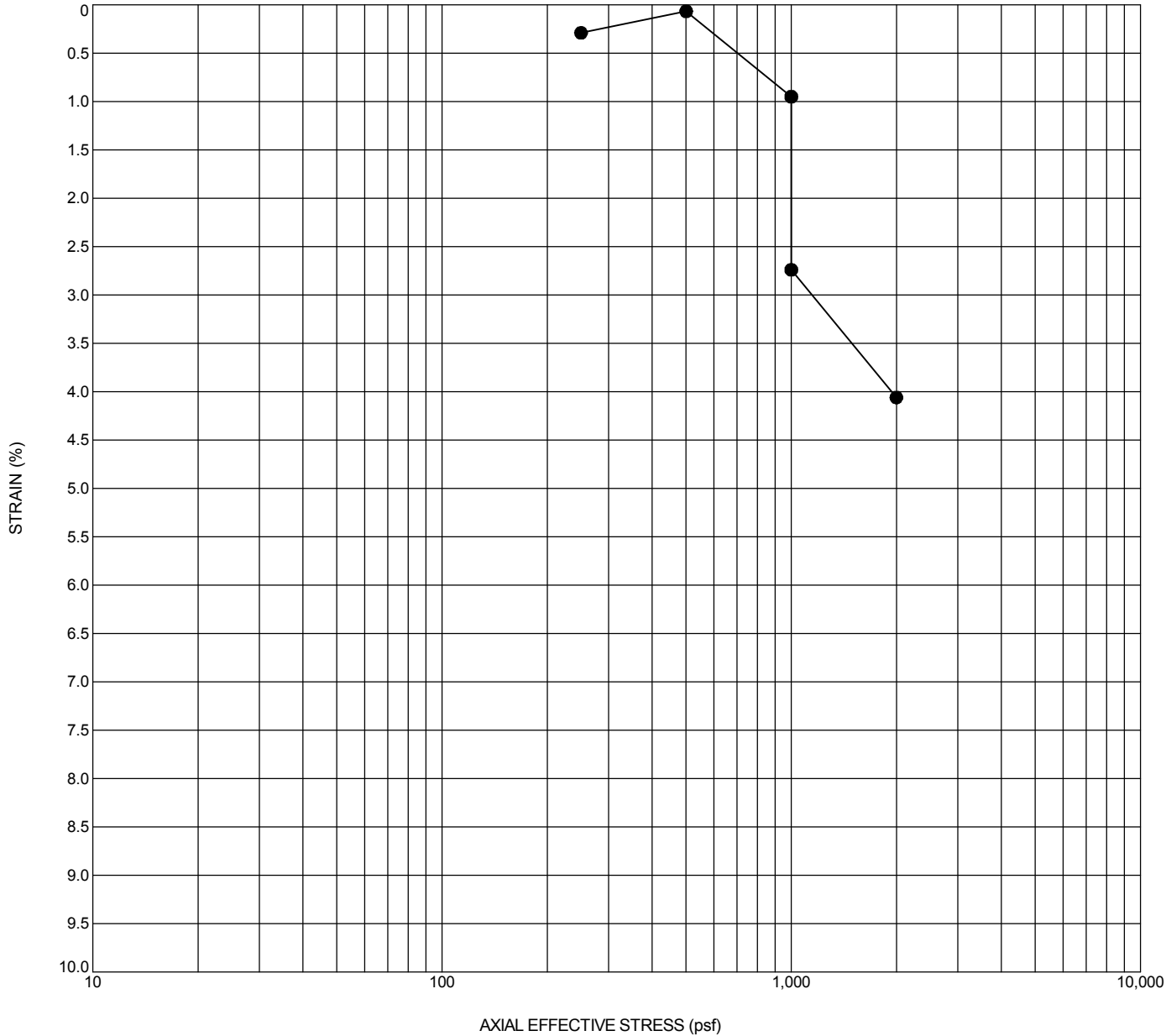
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CONSOLIDATION TEST

PROPOSED HANFORD PLACE  
MEDICAL & MIXED-USE PROPERTY  
HANFORD, CALIFORNIA

APPENDIX

B-8

PAGE: 1 of 2



| Exploration ID |                       | Depth (ft.)          | Sample Description |                   |                    |                    |                |            |                  |              |    |    |    |
|----------------|-----------------------|----------------------|--------------------|-------------------|--------------------|--------------------|----------------|------------|------------------|--------------|----|----|----|
| B-7            |                       | 7.5                  | SILTY SAND (SM)    |                   |                    |                    |                |            |                  |              |    |    |    |
|                | Sample Condition Type | Sample Diameter (mm) | Height (mm)        | Water Content (%) | Dry Unit Wt. (pcf) | Wet Unit Wt. (pcf) | Saturation (%) | Void Ratio | Specific Gravity | Passing #200 | LL | PL | PI |
| Initial        |                       | NM                   | NM                 | 7.9               | 97.8               | 105.5              | NM             | NM         | NM               | NM           | NM | NM | NM |
| Final          |                       | NM                   | NM                 | 25.9              | 101.9              | 128.3              | NM             | NM         | NM               |              |    |    |    |

Testing performed in general accordance with ASTM D2435 Method A.  
NP = Nonplastic  
NM = Not Measured



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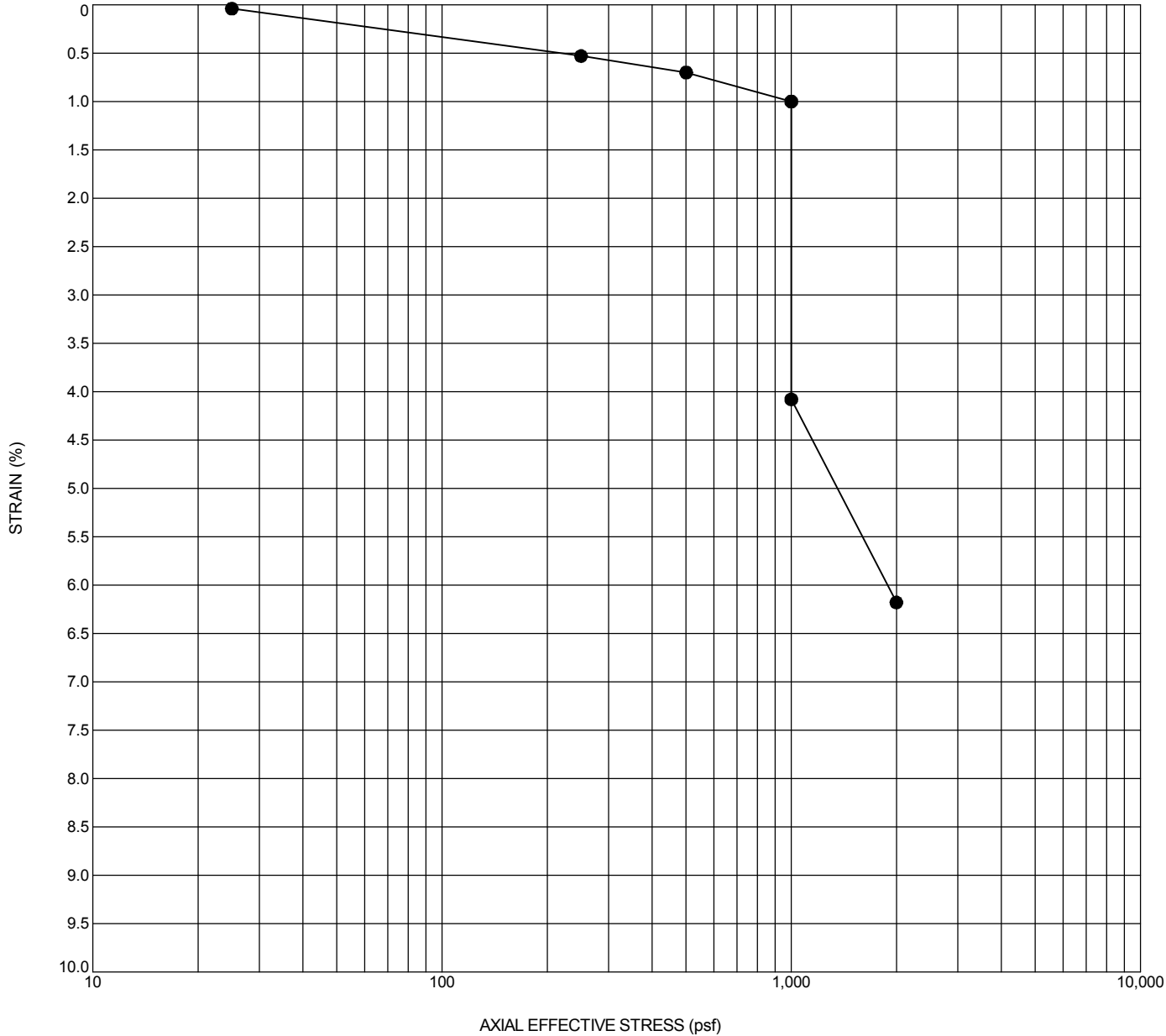
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ONE DIMENSIONAL  
CONSOLIDATION TEST

PROPOSED HANFORD PLACE  
MEDICAL & MIXED-USE PROPERTY  
HANFORD, CALIFORNIA

APPENDIX

B-9



| Exploration ID |                       | Depth (ft.)          | Sample Description |                   |                    |                    |                |            |                            |              |    |    |    |
|----------------|-----------------------|----------------------|--------------------|-------------------|--------------------|--------------------|----------------|------------|----------------------------|--------------|----|----|----|
| B-9            |                       | 2                    | SANDY SILT (ML)    |                   |                    |                    |                |            |                            |              |    |    |    |
|                | Sample Condition Type | Sample Diameter (mm) | Height (mm)        | Water Content (%) | Dry Unit Wt. (pcf) | Wet Unit Wt. (pcf) | Saturation (%) | Void Ratio | Specific Gravity (Assumed) | Passing #200 | LL | PL | PI |
| Initial        |                       | 61.5                 | 25.4               | 7.1               | 92.0               | 98.5               | 23.6           | 0.800      | 2.65                       | 57           | NM | NM | NM |
| Final          |                       | 61.5                 | 23.9               | 24.3              | 98.5               | 122.4              | 94.1           | 0.690      | 2.65                       |              |    |    |    |

Testing performed in general accordance with ASTM D2435 Method A.  
NP = Nonplastic  
NM = Not Measured



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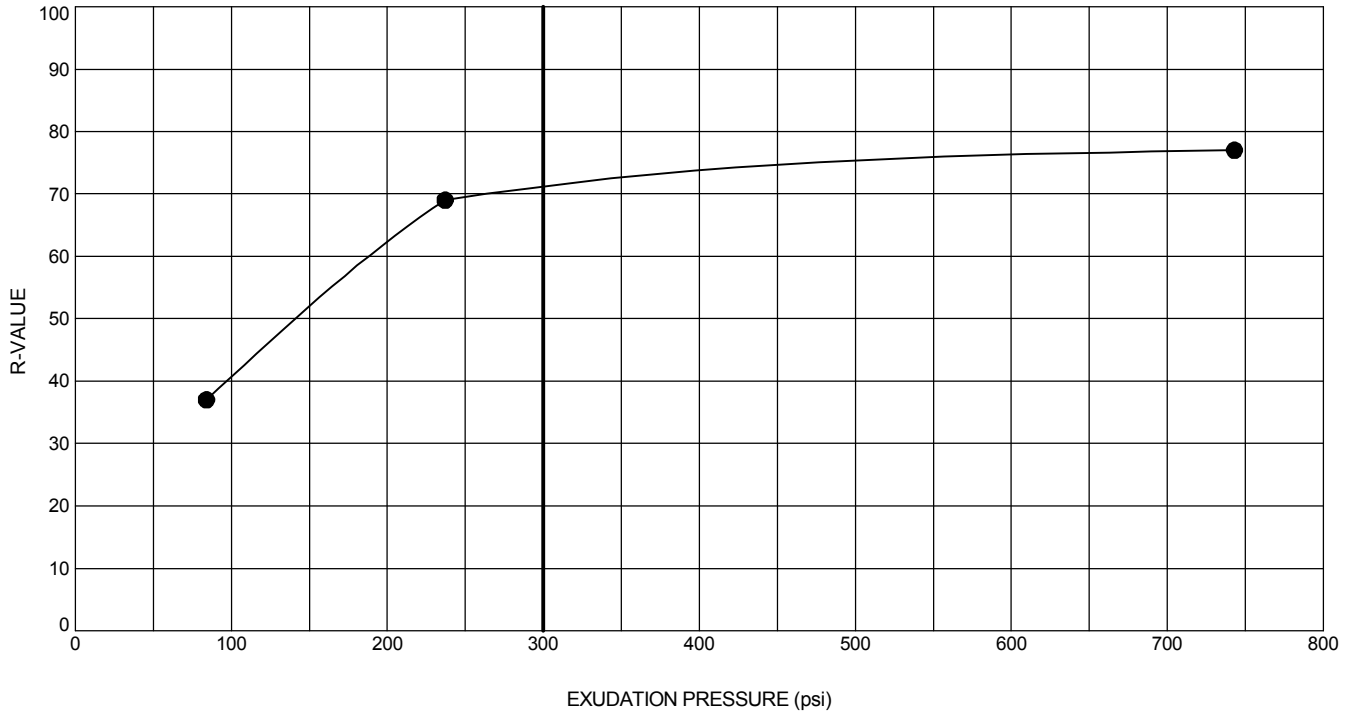
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ONE DIMENSIONAL  
CONSOLIDATION TEST

PROPOSED HANFORD PLACE  
MEDICAL & MIXED-USE PROPERTY  
HANFORD, CALIFORNIA

APPENDIX

B-10



| Exploration ID | Depth (ft.)                  | Sample Description    |                          |                          | R-Value @ 300 psi<br>Exudation Pressure |
|----------------|------------------------------|-----------------------|--------------------------|--------------------------|-----------------------------------------|
| RV-1           | 0 - 3                        | SILTY SAND (SM)       |                          |                          | 70                                      |
| Specimen No.   | Moisture at Time of Test (%) | Dry Unit Weight (pcf) | Expansion Pressure (psi) | Exudation Pressure (psi) | Corrected<br>Resistance<br>Value        |
| 1              | 10.9                         | 118.3                 | 229                      | 743                      | 77                                      |
| 2              | 13.1                         | 116.3                 | 22                       | 84                       | 37                                      |
| 3              | 12.2                         | 116.1                 | 134                      | 237                      | 69                                      |

Testing performed in general accordance with ASTM D2844.



PROJECT NO.:  
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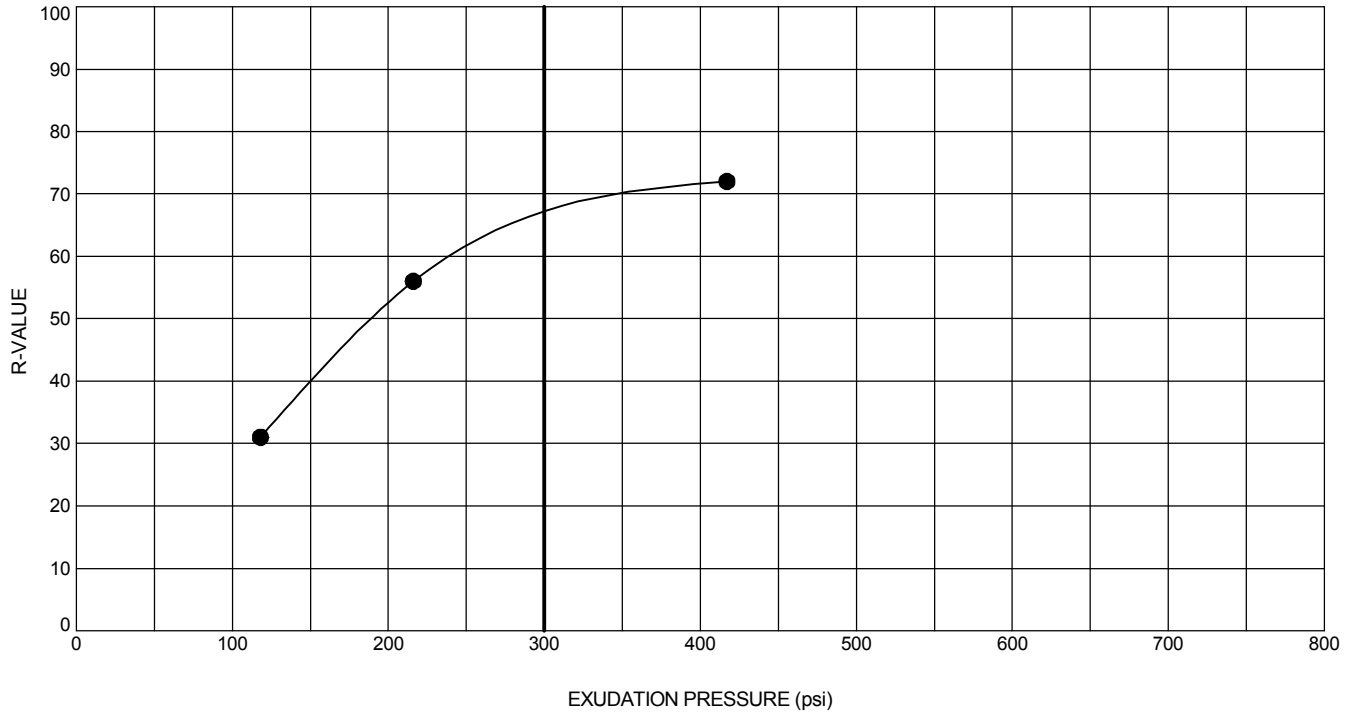
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R-VALUE

PROPOSED HANFORD PLACE  
 MEDICAL & MIXED-USE PROPERTY  
 HANFORD, CALIFORNIA

APPENDIX

B-11



| Exploration ID | Depth (ft.)                  | Sample Description    |                          |                          | R-Value @ 300 psi<br>Exudation Pressure |
|----------------|------------------------------|-----------------------|--------------------------|--------------------------|-----------------------------------------|
| RV-2           | 0 - 3                        | SILTY SAND (SM)       |                          |                          | 63                                      |
| Specimen No.   | Moisture at Time of Test (%) | Dry Unit Weight (pcf) | Expansion Pressure (psi) | Exudation Pressure (psi) | Corrected<br>Resistance<br>Value        |
| 1              | 10.3                         | 121.4                 | 178                      | 417                      | 72                                      |
| 2              | 12.0                         | 119.5                 | 4                        | 118                      | 31                                      |
| 3              | 11.1                         | 120.7                 | 48                       | 216                      | 56                                      |

Testing performed in general accordance with ASTM D2844.



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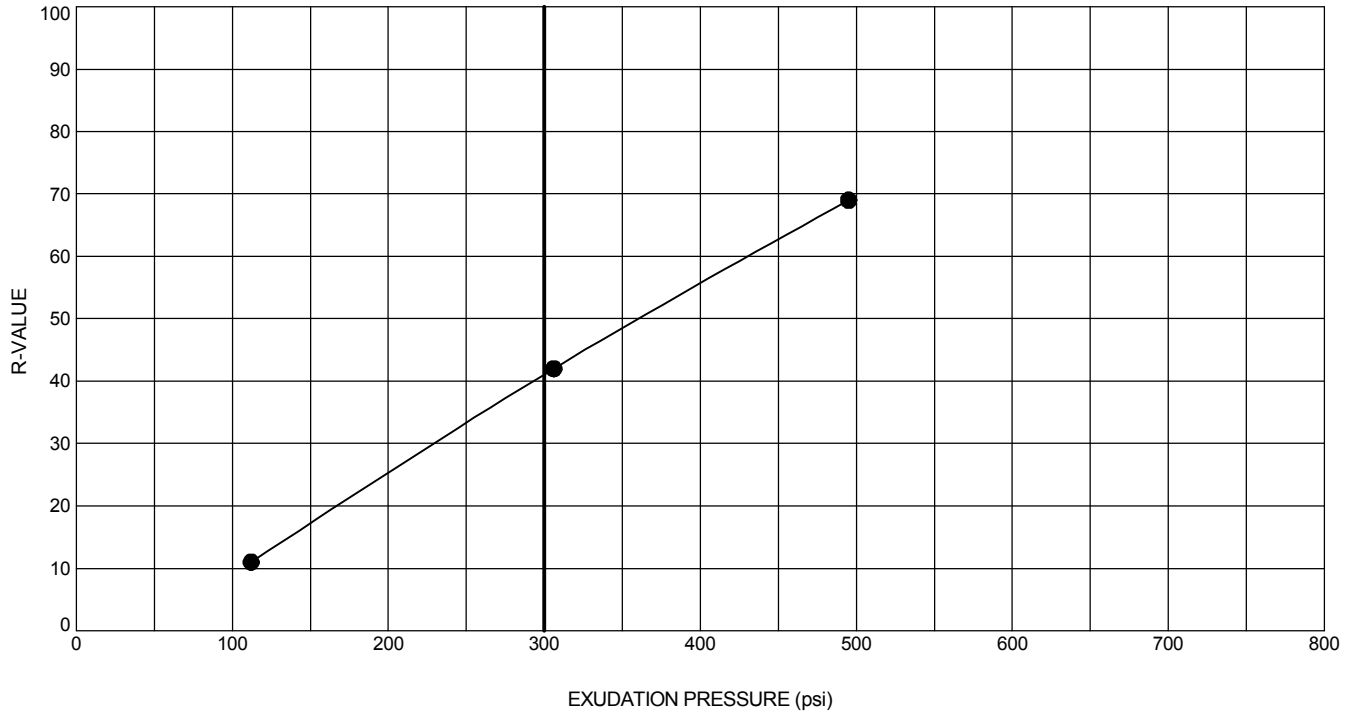
R-VALUE

PROPOSED HANFORD PLACE  
 MEDICAL & MIXED-USE PROPERTY  
 HANFORD, CALIFORNIA

APPENDIX

**B-12**





| Exploration ID | Depth (ft.)                  | Sample Description    |                          |                          | R-Value @ 300 psi<br>Exudation Pressure |
|----------------|------------------------------|-----------------------|--------------------------|--------------------------|-----------------------------------------|
| RV-3           | 0 - 3                        | SANDY SILT (ML)       |                          |                          | 41                                      |
| Specimen No.   | Moisture at Time of Test (%) | Dry Unit Weight (pcf) | Expansion Pressure (psi) | Exudation Pressure (psi) | Corrected<br>Resistance<br>Value        |
| 1              | 13.7                         | 115.8                 | 26                       | 112                      | 11                                      |
| 2              | 12.0                         | 122.1                 | 186                      | 306                      | 42                                      |
| 3              | 11.1                         | 122.5                 | 325                      | 495                      | 69                                      |

Testing performed in general accordance with ASTM D2844.



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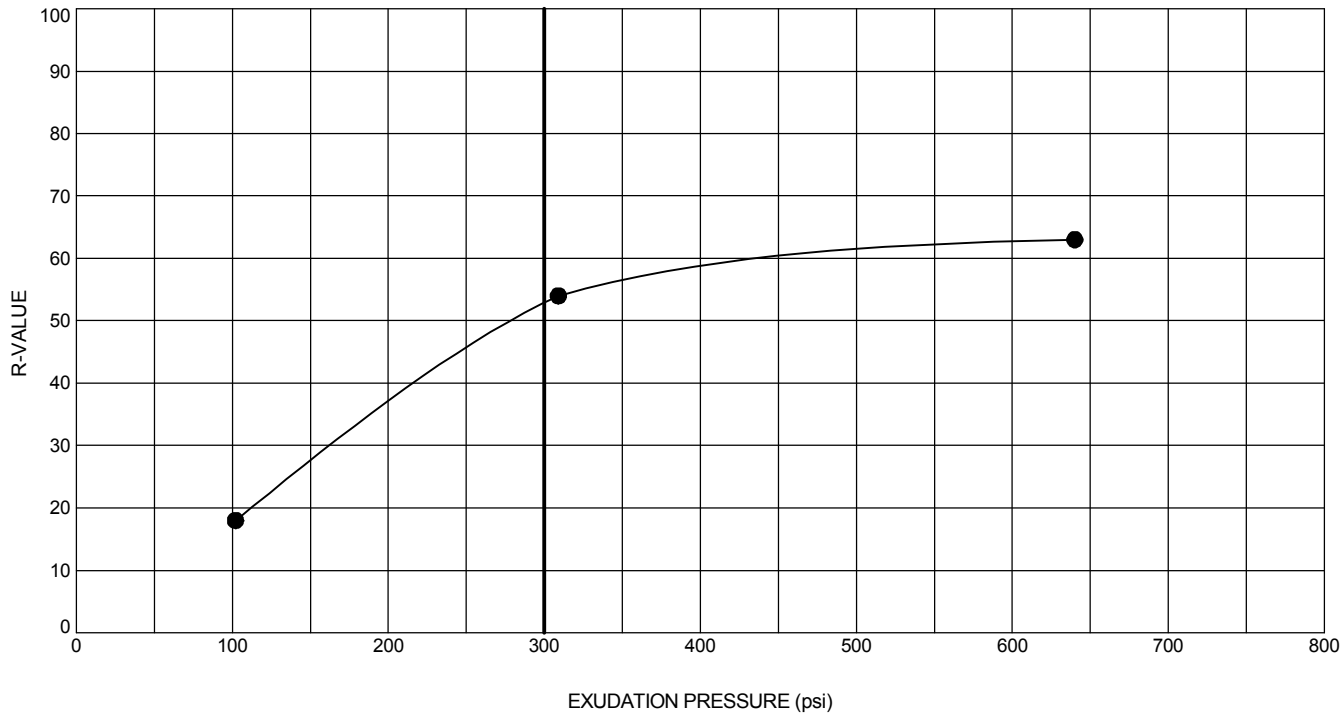
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R-VALUE

PROPOSED HANFORD PLACE  
MEDICAL & MIXED-USE PROPERTY  
HANFORD, CALIFORNIA

APPENDIX

B-13



| Exploration ID | Depth (ft.)                  | Sample Description    |                          |                          | R-Value @ 300 psi Exudation Pressure |
|----------------|------------------------------|-----------------------|--------------------------|--------------------------|--------------------------------------|
| RV-4           | 0 - 3                        | SANDY SILT (ML)       |                          |                          | 53                                   |
| Specimen No.   | Moisture at Time of Test (%) | Dry Unit Weight (pcf) | Expansion Pressure (psi) | Exudation Pressure (psi) | Corrected Resistance Value           |
| 1              | 11.8                         | 118.6                 | 450                      | 309                      | 54                                   |
| 2              | 13.6                         | 118.1                 | 147                      | 102                      | 18                                   |
| 3              | 11.4                         | 121.4                 | 688                      | 640                      | 63                                   |

Testing performed in general accordance with ASTM D2844.



PROJECT NO.:  
20210045.001A

DRAWN BY: AA

CHECKED BY: ES

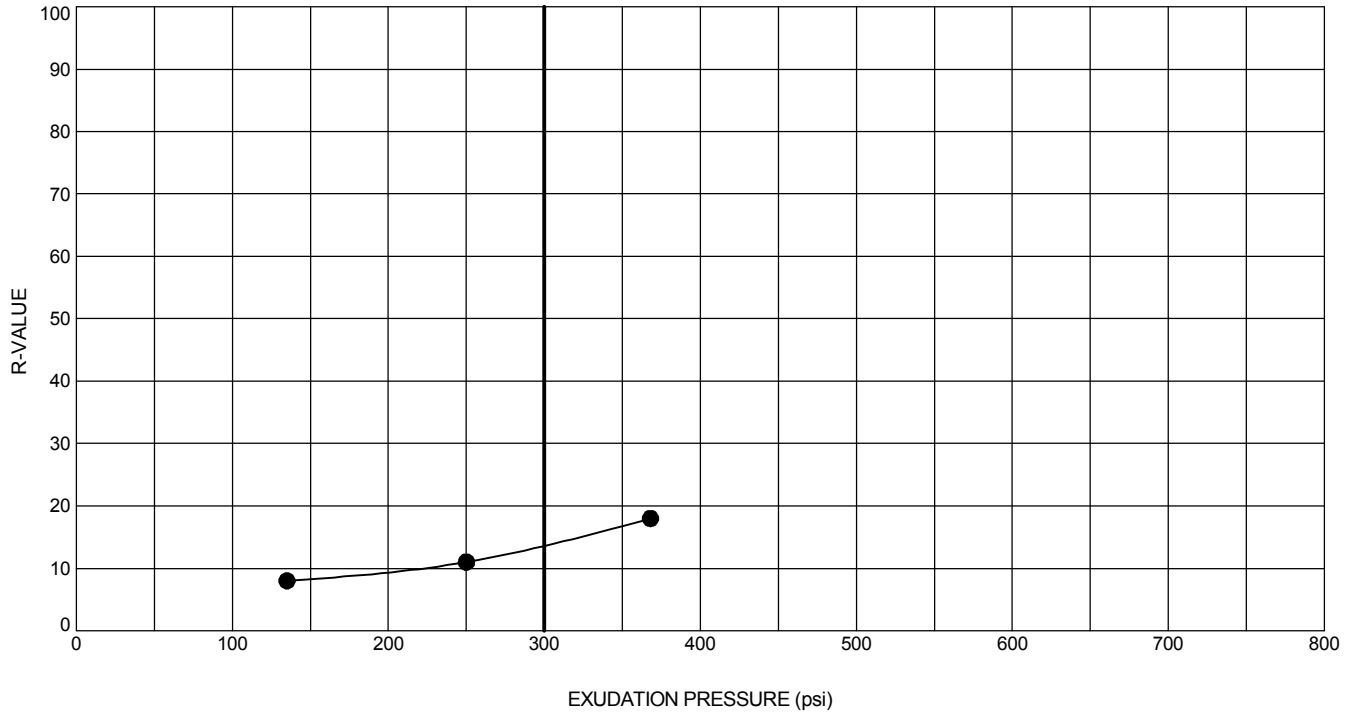
DATE: 6/4/2020

R-VALUE

PROPOSED HANFORD PLACE  
 MEDICAL & MIXED-USE PROPERTY  
 HANFORD, CALIFORNIA

APPENDIX

B-14



| Exploration ID | Depth (ft.)                  | Sample Description    |                          |                          | R-Value @ 300 psi<br>Exudation Pressure |
|----------------|------------------------------|-----------------------|--------------------------|--------------------------|-----------------------------------------|
| RV-5           | 0 - 3                        | SILT (ML)             |                          |                          | 14                                      |
| Specimen No.   | Moisture at Time of Test (%) | Dry Unit Weight (pcf) | Expansion Pressure (psi) | Exudation Pressure (psi) | Corrected<br>Resistance<br>Value        |
| 1              | 13.8                         | 117.3                 | 208                      | 368                      | 18                                      |
| 2              | 14.7                         | 114.5                 | 121                      | 250                      | 11                                      |
| 3              | 15.5                         | 112.6                 | 61                       | 135                      | 8                                       |

Testing performed in general accordance with ASTM D2844.



PROJECT NO.:  
20210045.001A

DRAWN BY: AA

CHECKED BY: ES

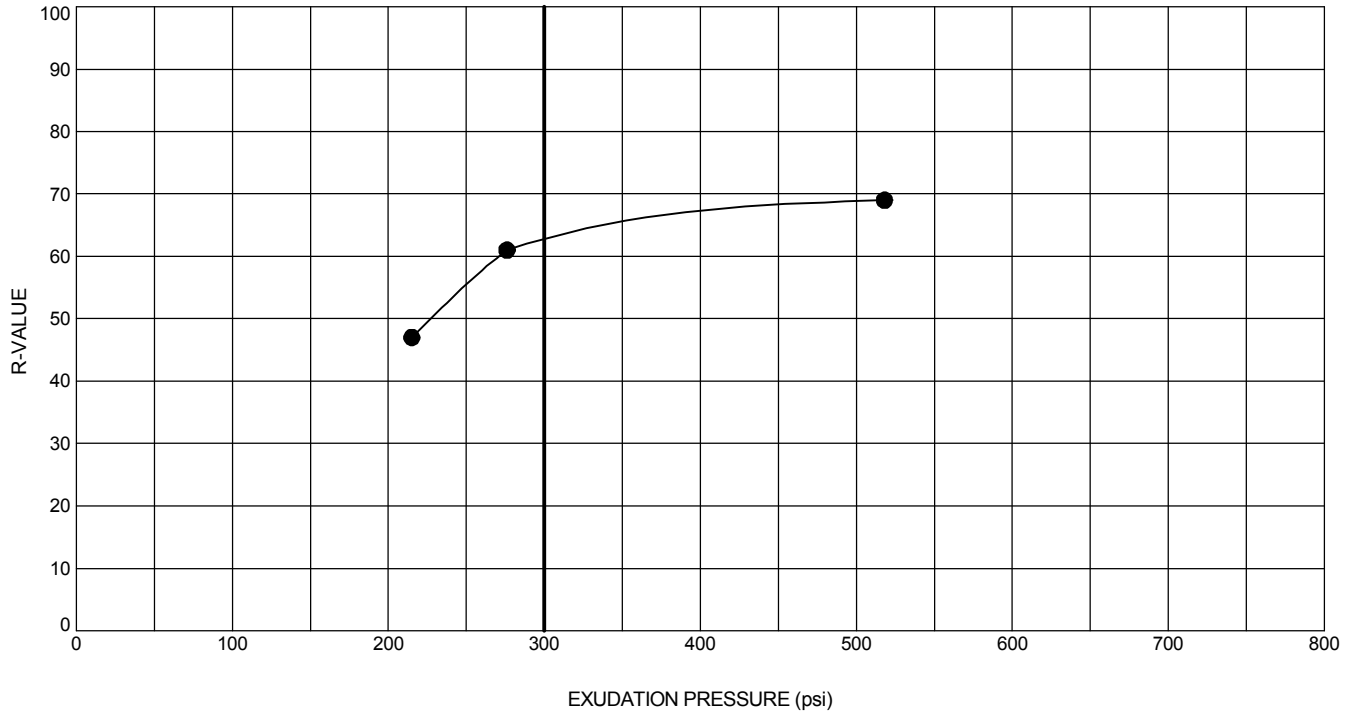
DATE: 6/4/2020

R-VALUE

PROPOSED HANFORD PLACE  
 MEDICAL & MIXED-USE PROPERTY  
 HANFORD, CALIFORNIA

APPENDIX

B-15



| Exploration ID | Depth (ft.)                  | Sample Description    |                          |                          | R-Value @ 300 psi<br>Exudation Pressure |
|----------------|------------------------------|-----------------------|--------------------------|--------------------------|-----------------------------------------|
| RV-6           | 0 - 3                        | SILTY SAND (SM)       |                          |                          | 62                                      |
| Specimen No.   | Moisture at Time of Test (%) | Dry Unit Weight (pcf) | Expansion Pressure (psi) | Exudation Pressure (psi) | Corrected<br>Resistance<br>Value        |
| 1              | 12.6                         | 116.4                 | 178                      | 215                      | 47                                      |
| 2              | 11.8                         | 117.5                 | 368                      | 518                      | 69                                      |
| 3              | 12.2                         | 117.0                 | 255                      | 276                      | 61                                      |

Testing performed in general accordance with ASTM D2844.



PROJECT NO.:  
20210045.001A

DRAWN BY: AA

CHECKED BY: ES

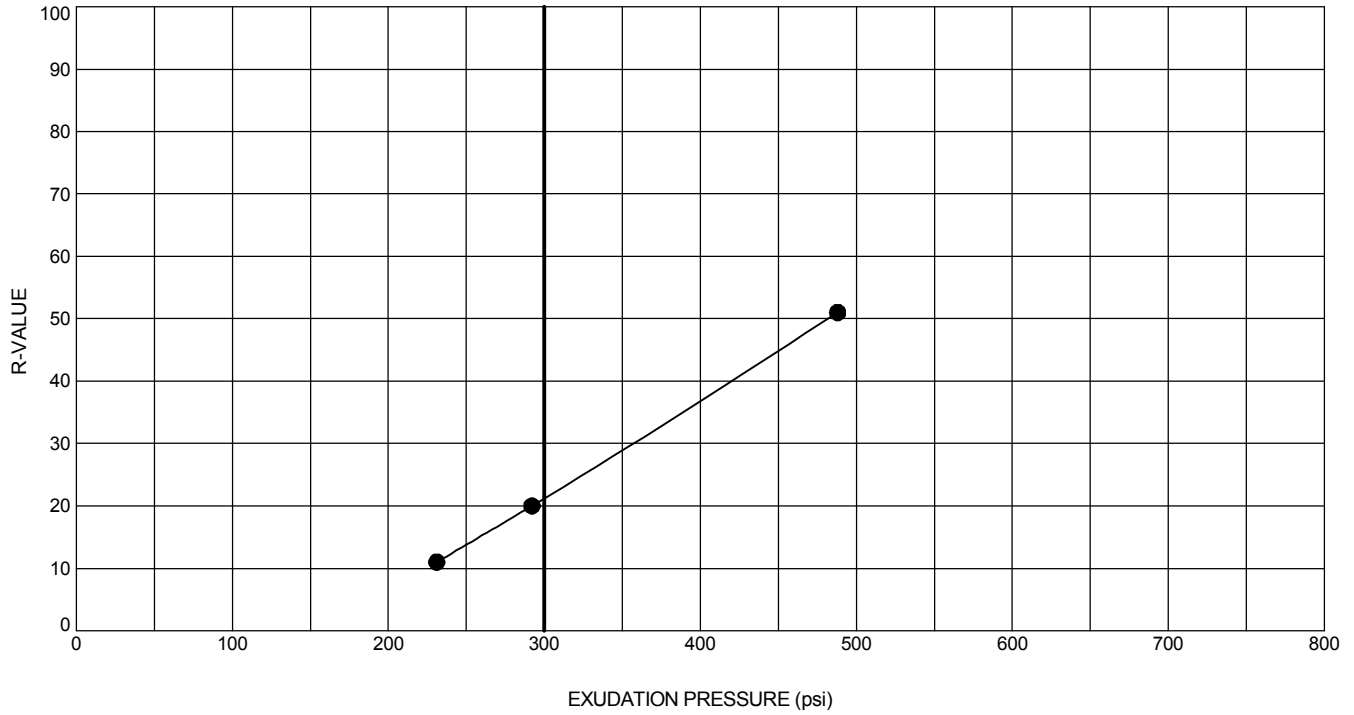
DATE: 6/4/2020

R-VALUE

PROPOSED HANFORD PLACE  
 MEDICAL & MIXED-USE PROPERTY  
 HANFORD, CALIFORNIA

APPENDIX

B-16



| Exploration ID | Depth (ft.)                  | Sample Description    |                          |                          | R-Value @ 300 psi<br>Exudation Pressure |
|----------------|------------------------------|-----------------------|--------------------------|--------------------------|-----------------------------------------|
| RV-7           | 0 - 3                        | SANDY SILT (ML)       |                          |                          | 21                                      |
| Specimen No.   | Moisture at Time of Test (%) | Dry Unit Weight (pcf) | Expansion Pressure (psi) | Exudation Pressure (psi) | Corrected<br>Resistance<br>Value        |
| 1              | 14.0                         | 116.8                 | 104                      | 292                      | 20                                      |
| 2              | 14.8                         | 113.4                 | 39                       | 231                      | 11                                      |
| 3              | 13.1                         | 115.2                 | 299                      | 488                      | 51                                      |

Testing performed in general accordance with ASTM D2844.



PROJECT NO.:  
20210045.001A

DRAWN BY: AA

CHECKED BY: ES

DATE: 6/4/2020

R-VALUE

PROPOSED HANFORD PLACE  
 MEDICAL & MIXED-USE PROPERTY  
 HANFORD, CALIFORNIA

APPENDIX

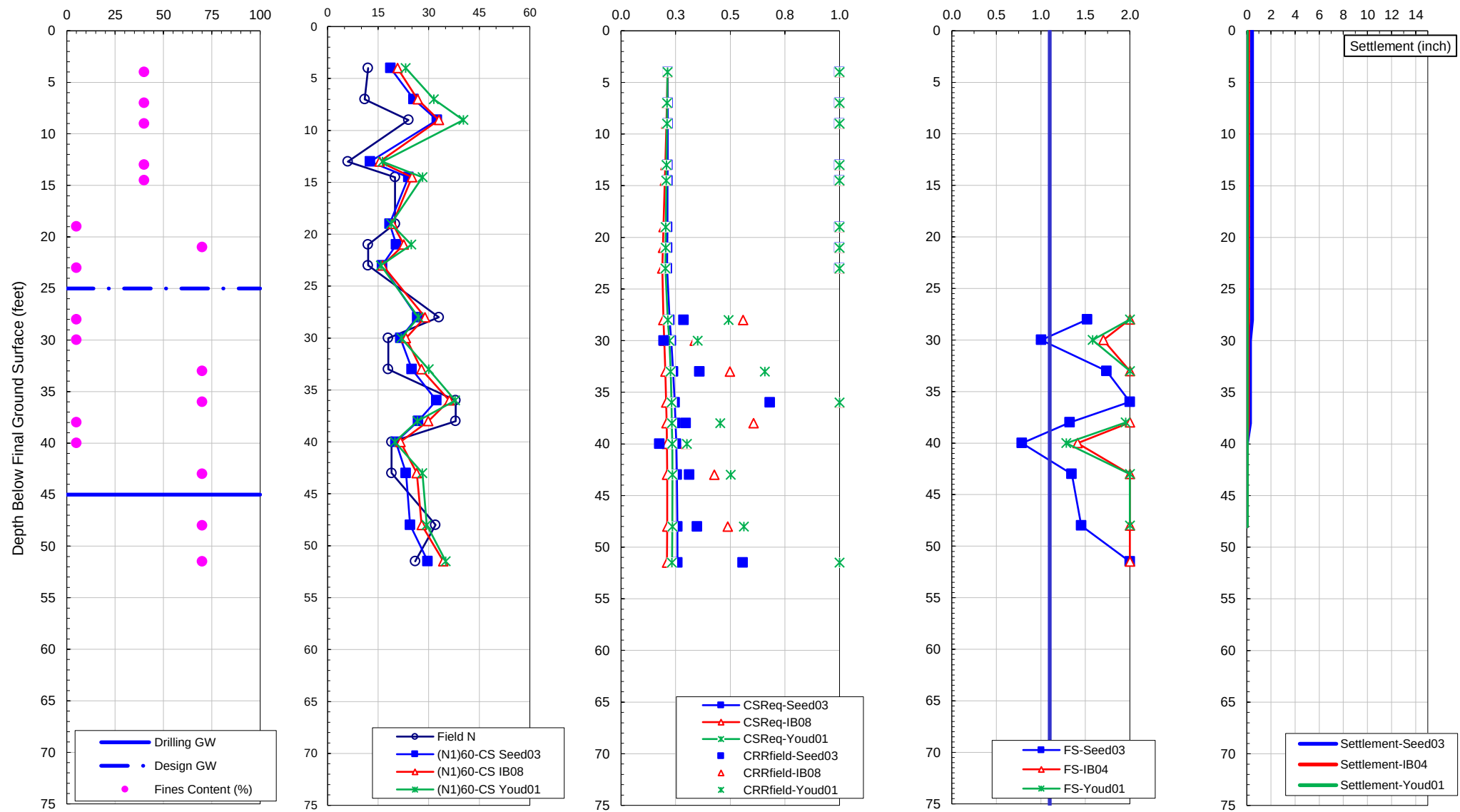
B-17

## APPENDIX C

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Liquefaction Analysis  
Dry Sand Settlement Analysis

Boring ID: **B-6 (5% in 50 yrs)**  $M_w = 6.2$   $PGA = 0.33g$  Groundwater Depth During Drilling (ft) = **45.0 ft** Existing Ground Elevation = **100.0 ft** Ana. by: A AhTye  
 Design Groundwater Depth (ft) = **25.0 ft** Final Ground Elevation = **100.0 ft** Checked by: S. Plauson



1.  $(N_1)_{60-CS}$  capped at 60; 2.  $CRR_{field} = 1$  for non-liquefiable soils; 3. FS is capped at 2.0 for liquefiable soils and not plotted for non-liquefiable soils including soils above G.W.T.



1330 Broadway, #1200  
 Oakland, California 94612  
 t: 510628 9000 f: 510 628 9009

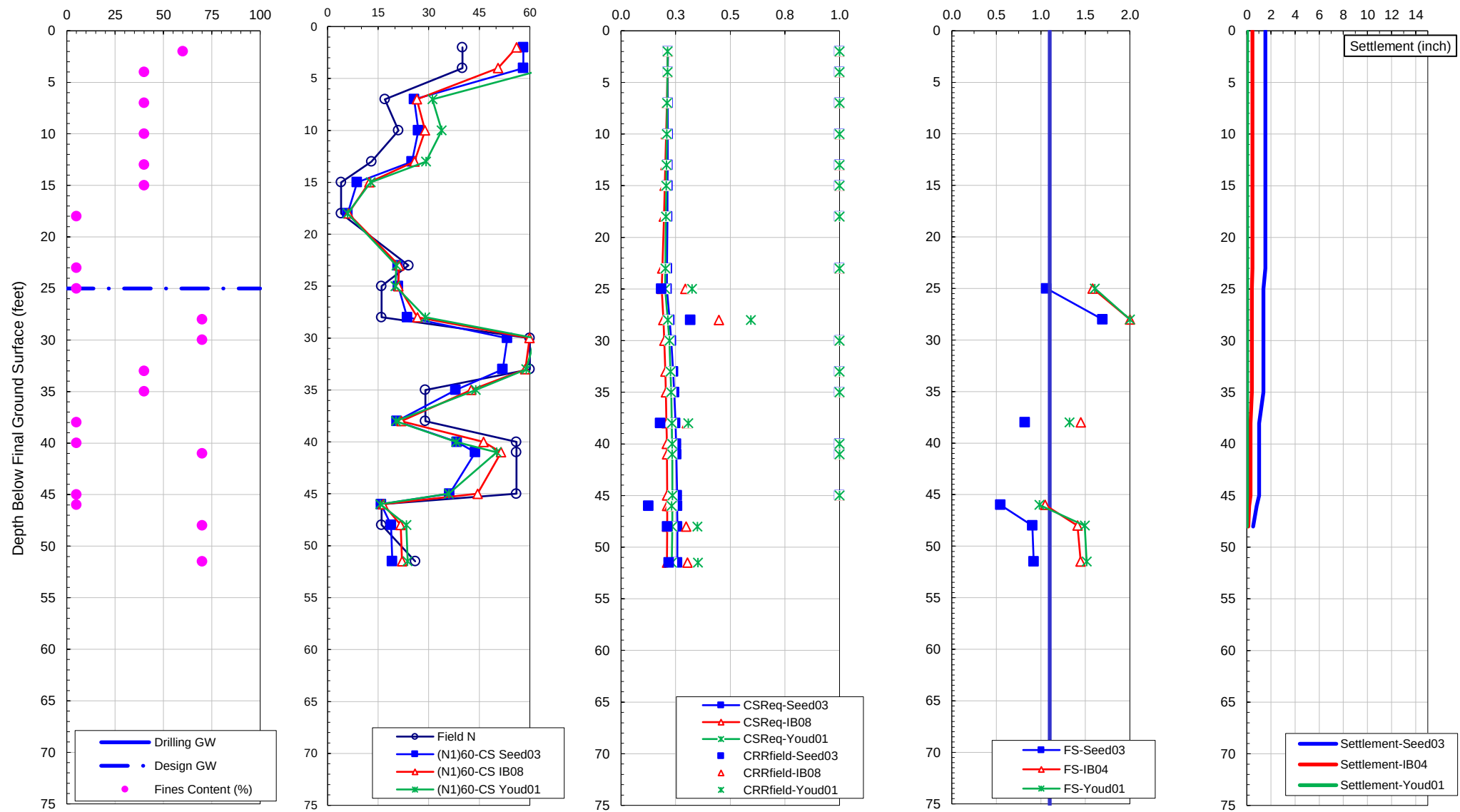
Project Name: Hanford Place  
 Project No.: 20210045  
 Project Location: Hanford, CA

**LIQUEFACTION ANALYSIS**

Date 5/26/2020 **FIGURE A-1**



Boring ID: **B-7 (5% in 50 yrs)**  $M_w = 6.2$   $PGA = 0.33g$  Groundwater Depth During Drilling (ft) = **100.0 ft** Existing Ground Elevation = **100.0 ft** Ana. by: A AhTye  
 Design Groundwater Depth (ft) = **25.0 ft** Final Ground Elevation = **100.0 ft** Checked by: S. Plauson



1.  $(N_1)_{60-CS}$  capped at 60; 2. CRRfield = 1 for non-liquefiable soils; 3. FS is capped at 2.0 for liquefiable soils and not plotted for non-liquefiable soils including soils above G.W.T.



1330 Broadway, #1200  
Oakland, California 94612  
t: 510628 9000 f: 510 628 9009

Project Name: Hanford Place  
Project No.: 20210045  
Project Location: Hanford, CA

# LIQUEFACTION ANALYSIS

Date 5/26/2020

**FIGURE A-1**

Seismic Settlement of Dry Sands  
Tokimatsu & Seed (1987)

M = 6.21 Moment Magnitude (Use Modal value)  
PHA = 0.33 g (Peak horizontal acceleration; use PG<sub>0</sub>)  
γ = 105 pcf (unit weight of soil)  
K<sub>0</sub> = 0.47 (at-rest coefficient)

Project No. 20210045  
Project Name Hanford Place  
Analysis by A. AhTye

|        |                                 |                      |                     |                               |                |                      |                       |                       |              |                                                                          |                                    |                                       |                         |                           |                        |                                                                  |                                                        | Results                                     |                                        |                                  |                                   |                                |                                   |                                  |
|--------|---------------------------------|----------------------|---------------------|-------------------------------|----------------|----------------------|-----------------------|-----------------------|--------------|--------------------------------------------------------------------------|------------------------------------|---------------------------------------|-------------------------|---------------------------|------------------------|------------------------------------------------------------------|--------------------------------------------------------|---------------------------------------------|----------------------------------------|----------------------------------|-----------------------------------|--------------------------------|-----------------------------------|----------------------------------|
| Boring | Depth at middle of sampler (ft) | Layer Thickness (ft) | Soil Classification | Anticipated Fines Content (%) | r <sub>d</sub> | σ <sub>v</sub> (psf) | σ <sub>v'</sub> (psf) | σ <sub>v'</sub> (tsf) | N (blows/ft) | SAMPLER TYPE<br>(1) SPT w/out liners<br>(2) SPT w/ liners (3) MC (4) CAL | Sampler Correction, C <sub>s</sub> | Overburden Correction, C <sub>N</sub> | Fine Content Correction | N <sub>1</sub> (blows/ft) | G <sub>max</sub> (psf) | Effective Shear Strain, γ <sub>sh</sub> (Geff/G <sub>max</sub> ) | Effective Shear Strain, γ <sub>sh</sub> (from Fig. 11) | Effective Shear Strain, γ <sub>sh</sub> (%) | Volumetric Strain (from Figure 13) (%) | Seismic Settlement for M7.5 (in) | Seismic Settlement for M5.25 (in) | Seismic Settlement for M6 (in) | Seismic Settlement for M6.75 (in) | Seismic Settlement for M8.5 (in) |
| B-6    | 2                               | 4                    | SM                  | 40                            | 0.996          | 210                  | 135.8                 | 0.0679                | 12           | 4                                                                        | 0.65                               | 1.70                                  | 3.2                     | 16                        | 592866                 | 7.56E-05                                                         | 1.2E-04                                                | 1.2E-02                                     | 0.0200                                 | 0.019                            | 0.01                              | 0.01                           | 0.02                              | 0.02                             |
|        | 5.5                             | 3                    | SM                  | 40                            | 0.988          | 577.5                | 373.45                | 0.186725              | 11           | 1                                                                        | 1.1                                | 1.70                                  | 3.2                     | 24                        | 1111278                | 1.10E-04                                                         | 3.0E-04                                                | 3.0E-02                                     | 0.0220                                 | 0.016                            | 0.01                              | 0.01                           | 0.01                              | 0.02                             |
|        | 8                               | 2                    | SM                  | 40                            | 0.983          | 840                  | 543.2                 | 0.2716                | 24           | 4                                                                        | 0.65                               | 1.54                                  | 3.2                     | 27                        | 1403068                | 1.26E-04                                                         | 3.0E-04                                                | 3.0E-02                                     | 0.0200                                 | 0.010                            | 0.00                              | 0.01                           | 0.01                              | 0.01                             |
|        | 11                              | 4                    | SM                  | 40                            | 0.976          | 1155                 | 746.9                 | 0.37345               | 6            | 1                                                                        | 1.1                                | 1.32                                  | 3.2                     | 12                        | 1247366                | 1.94E-04                                                         | 4.0E-04                                                | 4.0E-02                                     | 0.0800                                 | 0.077                            | 0.03                              | 0.05                           | 0.07                              | 0.10                             |
|        | 13.75                           | 1.5                  | SM                  | 40                            | 0.970          | 1443.75              | 933.625               | 0.4668125             | 20           | 4                                                                        | 0.65                               | 1.18                                  | 3.2                     | 19                        | 1616265                | 1.86E-04                                                         | 4.0E-04                                                | 4.0E-02                                     | 0.0420                                 | 0.015                            | 0.01                              | 0.01                           | 0.01                              | 0.02                             |
|        | 16.75                           | 4.5                  | SP                  | 5                             | 0.964          | 1758.75              | 1137.325              | 0.5686625             | 20           | 4                                                                        | 0.65                               | 1.07                                  | 1.0                     | 15                        | 1658342                | 2.19E-04                                                         | 6.0E-04                                                | 6.0E-02                                     | 0.1000                                 | 0.108                            | 0.04                              | 0.06                           | 0.09                              | 0.14                             |
|        | 20                              | 2                    | ML                  | 70                            | 0.957          | 2100                 | 1358                  | 0.679                 | 12           | 1                                                                        | 1.1                                | 0.98                                  | 4.8                     | 18                        | 1920095                | 2.24E-04                                                         | 5.0E-04                                                | 5.0E-02                                     | 0.0600                                 | 0.029                            | 0.01                              | 0.02                           | 0.02                              | 0.04                             |
|        | 22                              | 2                    | SP                  | 5                             | 0.952          | 2310                 | 1493.8                | 0.7469                | 12           | 1                                                                        | 1.1                                | 0.93                                  | 1.0                     | 13                        | 1830635                | 2.58E-04                                                         | 5.2E-04                                                | 5.2E-02                                     | 0.1000                                 | 0.048                            | 0.02                              | 0.03                           | 0.04                              | 0.06                             |
|        | 25.5                            | 5                    | SP                  | 5                             | 0.939          | 2677.5               | 1731.45               | 0.865725              | 33           | 4                                                                        | 0.65                               | 0.86                                  | 1.0                     | 20                        | 2241470                | 2.41E-04                                                         | 5.0E-04                                                | 5.0E-02                                     | 0.0500                                 | 0.060                            | 0.02                              | 0.04                           | 0.05                              | 0.08                             |
|        | 29                              | 2                    | SP                  | 5                             | 0.924          | 3045                 | 1969.1                | 0.98455               | 18           | 1                                                                        | 1.1                                | 0.81                                  | 1.0                     | 17                        | 2284078                | 2.64E-04                                                         | 4.8E-04                                                | 4.8E-02                                     | 0.0600                                 | 0.029                            | 0.01                              | 0.02                           | 0.02                              | 0.04                             |
|        | 31.5                            | 3                    | CL-ML               | 70                            | 0.911          | 3307.5               | 2138.85               | 1.069425              | 18           | 1                                                                        | 1.1                                | 0.78                                  | 4.8                     | 20                        | 2518920                | 2.57E-04                                                         | 4.8E-04                                                | 4.8E-02                                     | 0.0500                                 | 0.036                            | 0.01                              | 0.02                           | 0.03                              | 0.05                             |
|        | 34.5                            | 3                    | CL-ML               | 70                            | 0.893          | 3622.5               | 2342.55               | 1.171275              | 38           | 4                                                                        | 0.65                               | 0.74                                  | 4.8                     | 23                        | 2758949                | 2.52E-04                                                         | 5.0E-04                                                | 5.0E-02                                     | 0.0480                                 | 0.035                            | 0.01                              | 0.02                           | 0.03                              | 0.04                             |
|        | 37                              | 2                    | SP                  | 5                             | 0.878          | 3885                 | 2512.3                | 1.25615               | 38           | 4                                                                        | 0.65                               | 0.72                                  | 1.0                     | 19                        | 2661855                | 2.75E-04                                                         | 5.0E-04                                                | 5.0E-02                                     | 0.0500                                 | 0.024                            | 0.01                              | 0.01                           | 0.02                              | 0.03                             |
|        | 39                              | 2                    | SP                  | 5                             | 0.866          | 4095                 | 2648.1                | 1.32405               | 19           | 1                                                                        | 1.1                                | 0.70                                  | 1.0                     | 16                        | 2571947                | 2.96E-04                                                         | 6.0E-04                                                | 6.0E-02                                     | 0.0900                                 | 0.043                            | 0.02                              | 0.03                           | 0.04                              | 0.05                             |
|        | 41.5                            | 3                    | CL-ML               | 70                            | 0.845          | 4357.5               | 2817.85               | 1.408925              | 19           | 1                                                                        | 1.1                                | 0.68                                  | 4.8                     | 19                        | 2830935                | 2.79E-04                                                         | 6.0E-04                                                | 6.0E-02                                     | 0.0700                                 | 0.050                            | 0.02                              | 0.03                           | 0.04                              | 0.06                             |
|        | 45.5                            | 5                    | CL-ML               | 70                            | 0.805          | 4777.5               | 3089.45               | 1.544725              | 32           | 4                                                                        | 0.65                               | 0.65                                  | 4.8                     | 18                        | 2927213                | 2.82E-04                                                         | 6.0E-04                                                | 6.0E-02                                     | 0.0700                                 | 0.084                            | 0.03                              | 0.05                           | 0.07                              | 0.11                             |
|        | 49.75                           | 3.5                  | CL-ML               | 70                            | 0.763          | 5223.75              | 3378.025              | 1.6890125             | 26           | 1                                                                        | 1.1                                | 0.62                                  | 4.8                     | 22                        | 3281460                | 2.60E-04                                                         | 5.0E-04                                                | 5.0E-02                                     | 0.0480                                 | 0.040                            | 0.02                              | 0.02                           | 0.03                              | 0.05                             |

0.723      0.29      0.43      0.61      0.90  
MAG 6.21      0.4841688  
Double the value for bi-directional shaking  
Select= 1/4 for M 6.21  
6      6.75

↑  
(use to read Fig. 11)

↑  
(use to read Fig. 13)

↑  
(use to read Fig. 11)

↑  
(use to read Fig. 13)

Seismic Settlement of Dry Sands  
Tokimatsu & Seed (1987)

M = 6.21 Moment Magnitude (Use Modal value)  
PHA = 0.33 g (Peak horizontal acceleration; use PG<sub>0</sub>)  
γ = 105 pcf (unit weight of soil)  
K<sub>0</sub> = 0.47 (at-rest coefficient)

Project No. 20210045  
Project Name Hanford Place  
Analysis by A. AhTye

|        |                                 |                      |                     |                               |                |                      |                       |                       |              |                                                                      |                                    |                                       |                         |                           |                        |                                                                   | Results                                                 |                                              |                                        |                                  |                                   |                                |                                   |                                  |
|--------|---------------------------------|----------------------|---------------------|-------------------------------|----------------|----------------------|-----------------------|-----------------------|--------------|----------------------------------------------------------------------|------------------------------------|---------------------------------------|-------------------------|---------------------------|------------------------|-------------------------------------------------------------------|---------------------------------------------------------|----------------------------------------------|----------------------------------------|----------------------------------|-----------------------------------|--------------------------------|-----------------------------------|----------------------------------|
| Boring | Depth at middle of sampler (ft) | Layer Thickness (ft) | Soil Classification | Anticipated Fines Content (%) | r <sub>d</sub> | σ <sub>v</sub> (psf) | σ' <sub>v</sub> (psf) | σ' <sub>v</sub> (tsf) | N (blows/ft) | SAMPLER TYPE<br>(1) SPT w/out liners<br>(2) SPT w/ liners (3) MC (4) | Sampler Correction, C <sub>s</sub> | Overburden Correction, C <sub>N</sub> | Fine Content Correction | N <sub>1</sub> (blows/ft) | G <sub>max</sub> (psf) | Effective Shear Strain, γ <sub>eff</sub> (Geff/G <sub>max</sub> ) | Effective Shear Strain, γ <sub>eff</sub> (from Fig. 11) | Effective Shear Strain, γ <sub>eff</sub> (%) | Volumetric Strain (from Figure 13) (%) | Seismic Settlement for M7.5 (in) | Seismic Settlement for M5.25 (in) | Seismic Settlement for M6 (in) | Seismic Settlement for M6.75 (in) | Seismic Settlement for M8.5 (in) |
| B-7    | 1                               | 2                    | ML                  | 60                            | 0.998          | 105                  | 67.9                  | 0.03395               | 40           | 4                                                                    | 0.65                               | 1.70                                  | 4.4                     | 49                        | 601419                 | 3.74E-05                                                          | 5.0E-05                                                 | 5.0E-03                                      | 0.0014                                 | 0.001                            | 0.00                              | 0.00                           | 0.00                              | 0.00                             |
|        | 3                               | 2                    | SM                  | 40                            | 0.993          | 315                  | 203.7                 | 0.10185               | 40           | 4                                                                    | 0.65                               | 1.70                                  | 3.2                     | 47                        | 1033043                | 6.50E-05                                                          | 8.5E-05                                                 | 8.5E-03                                      | 0.0015                                 | 0.001                            | 0.00                              | 0.00                           | 0.00                              | 0.00                             |
|        | 5.5                             | 3                    | SM                  | 40                            | 0.988          | 577.5                | 373.45                | 0.186725              | 17           | 4                                                                    | 0.65                               | 1.70                                  | 3.2                     | 22                        | 1082734                | 1.13E-04                                                          | 2.0E-04                                                 | 2.0E-02                                      | 0.0180                                 | 0.013                            | 0.01                              | 0.01                           | 0.01                              | 0.02                             |
|        | 8.5                             | 3                    | SM                  | 40                            | 0.982          | 892.5                | 577.15                | 0.288575              | 21           | 4                                                                    | 0.65                               | 1.50                                  | 3.2                     | 24                        | 1378851                | 1.36E-04                                                          | 2.1E-04                                                 | 2.1E-02                                      | 0.0150                                 | 0.011                            | 0.00                              | 0.01                           | 0.01                              | 0.01                             |
|        | 11.5                            | 3                    | SM                  | 40                            | 0.975          | 1207.5               | 780.85                | 0.390425              | 13           | 1                                                                    | 1.1                                | 1.29                                  | 3.2                     | 22                        | 1556529                | 1.62E-04                                                          | 2.8E-04                                                 | 2.8E-02                                      | 0.0220                                 | 0.016                            | 0.01                              | 0.01                           | 0.01                              | 0.02                             |
|        | 14                              | 2                    | SM                  | 40                            | 0.970          | 1470                 | 950.6                 | 0.4753                | 4            | 1                                                                    | 1.1                                | 1.17                                  | 3.2                     | 8                         | 1250115                | 2.45E-04                                                          | 7.0E-04                                                 | 7.0E-02                                      | 0.2000                                 | 0.096                            | 0.04                              | 0.06                           | 0.08                              | 0.12                             |
|        | 16.5                            | 3                    | SP                  | 5                             | 0.964          | 1732.5               | 1120.35               | 0.560175              | 4            | 1                                                                    | 1.1                                | 1.07                                  | 1.0                     | 6                         | 1197738                | 2.99E-04                                                          | 1.0E-03                                                 | 1.0E-01                                      | 0.4000                                 | 0.288                            | 0.12                              | 0.17                           | 0.24                              | 0.36                             |
|        | 20.5                            | 5                    | SP                  | 5                             | 0.955          | 2152.5               | 1391.95               | 0.695975              | 24           | 4                                                                    | 0.65                               | 0.96                                  | 1.0                     | 16                        | 1881705                | 2.34E-04                                                          | 5.5E-04                                                 | 5.5E-02                                      | 0.0800                                 | 0.096                            | 0.04                              | 0.06                           | 0.08                              | 0.12                             |
|        | 24                              | 2                    | SP                  | 5                             | 0.946          | 2520                 | 1629.6                | 0.8148                | 16           | 1                                                                    | 1.1                                | 0.89                                  | 1.0                     | 17                        | 2062830                | 2.48E-04                                                          | 5.0E-04                                                 | 5.0E-02                                      | 0.0700                                 | 0.034                            | 0.01                              | 0.02                           | 0.03                              | 0.04                             |
|        | 26.5                            | 3                    | CL                  | 70                            | 0.935          | 2782.5               | 1799.35               | 0.899675              | 16           | 1                                                                    | 1.1                                | 0.85                                  | 4.8                     | 20                        | 2292102                | 2.43E-04                                                          | 5.0E-04                                                 | 5.0E-02                                      | 0.0500                                 | 0.036                            | 0.01                              | 0.02                           | 0.03                              | 0.05                             |
|        | 29                              | 2                    | CL                  | 70                            | 0.924          | 3045                 | 1969.1                | 0.98455               | 60           | 4                                                                    | 0.65                               | 0.81                                  | 4.8                     | 36                        | 2941437                | 2.05E-04                                                          | 3.2E-04                                                 | 3.2E-02                                      | 0.0220                                 | 0.011                            | 0.00                              | 0.01                           | 0.01                              | 0.01                             |
|        | 31.5                            | 3                    | SM                  | 40                            | 0.911          | 3307.5               | 2138.85               | 1.069425              | 60           | 4                                                                    | 0.65                               | 0.78                                  | 3.2                     | 34                        | 2982532                | 2.17E-04                                                          | 3.5E-04                                                 | 3.5E-02                                      | 0.0160                                 | 0.012                            | 0.00                              | 0.01                           | 0.01                              | 0.01                             |
|        | 34                              | 2                    | SM                  | 40                            | 0.896          | 3570                 | 2308.6                | 1.1543                | 29           | 1                                                                    | 1.1                                | 0.75                                  | 3.2                     | 27                        | 2885595                | 2.38E-04                                                          | 4.5E-04                                                 | 4.5E-02                                      | 0.0330                                 | 0.016                            | 0.01                              | 0.01                           | 0.01                              | 0.02                             |
|        | 36.5                            | 3                    | SP                  | 5                             | 0.881          | 3832.5               | 2478.35               | 1.239175              | 29           | 4                                                                    | 0.65                               | 0.72                                  | 1.0                     | 15                        | 2434437                | 2.97E-04                                                          | 6.0E-04                                                 | 6.0E-02                                      | 0.1000                                 | 0.072                            | 0.03                              | 0.04                           | 0.06                              | 0.09                             |
|        | 39                              | 2                    | SP                  | 5                             | 0.866          | 4095                 | 2648.1                | 1.32405               | 56           | 4                                                                    | 0.65                               | 0.70                                  | 1.0                     | 26                        | 3066023                | 2.48E-04                                                          | 4.4E-04                                                 | 4.4E-02                                      | 0.0320                                 | 0.015                            | 0.01                              | 0.01                           | 0.01                              | 0.02                             |
|        | 40.5                            | 1                    | CL                  | 70                            | 0.855          | 4252.5               | 2749.95               | 1.374975              | 56           | 4                                                                    | 0.65                               | 0.69                                  | 4.8                     | 30                        | 3250254                | 2.40E-04                                                          | 4.5E-04                                                 | 4.5E-02                                      | 0.0280                                 | 0.007                            | 0.00                              | 0.00                           | 0.01                              | 0.01                             |
|        | 43                              | 4                    | SP                  | 5                             | 0.830          | 4515                 | 2919.7                | 1.45985               | 56           | 4                                                                    | 0.65                               | 0.67                                  | 1.0                     | 25                        | 3169449                | 2.54E-04                                                          | 4.5E-04                                                 | 4.5E-02                                      | 0.0320                                 | 0.031                            | 0.01                              | 0.02                           | 0.03                              | 0.04                             |
|        | 45.5                            | 1                    | SP                  | 5                             | 0.805          | 4777.5               | 3089.45               | 1.544725              | 16           | 1                                                                    | 1.1                                | 0.65                                  | 1.0                     | 12                        | 2572161                | 3.21E-04                                                          | 7.0E-04                                                 | 7.0E-02                                      | 0.1300                                 | 0.031                            | 0.01                              | 0.02                           | 0.03                              | 0.04                             |
|        | 47                              | 2                    | CL                  | 70                            | 0.790          | 4935                 | 3191.3                | 1.59565               | 16           | 1                                                                    | 1.1                                | 0.64                                  | 4.8                     | 16                        | 2847252                | 2.94E-04                                                          | 5.8E-04                                                 | 5.8E-02                                      | 0.0800                                 | 0.038                            | 0.02                              | 0.02                           | 0.03                              | 0.05                             |
|        | 49.75                           | 3.5                  | CL                  | 70                            | 0.763          | 5223.75              | 3378.025              | 1.6890125             | 26           | 4                                                                    | 0.65                               | 0.62                                  | 4.8                     | 15                        | 2883048                | 2.96E-04                                                          | 5.5E-04                                                 | 5.5E-02                                      | 0.0800                                 | 0.067                            | 0.03                              | 0.04                           | 0.06                              | 0.08                             |

0.890 0.36 0.53 0.76 1.11  
MAG 6.21 0.59637504  
Double the value for bi-directional shaking  
Select= 1/4 for M 6.21  
6 6.75

↑  
(use to read Fig. 11)

↑  
(use to read Fig. 13)

↑  
(use to read Fig. 11)

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(use to read Fig. 13)

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## APPENDIX E

### ACOUSTICAL ANALYSIS

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**ACOUSTICAL ANALYSIS**

**HANFORD PLACE  
HANFORD, CALIFORNIA**

**WJVA Report No. 20-016**

**PREPARED FOR**

**THE HANFORD GROUP/EPIC MANAGEMENT GROUP  
4405 MARGARITA ROAD, SUITE 100  
TEMECULA, CALIFORNIA 92592**

**PREPARED BY**

**WJV ACOUSTICS, INC.  
VISALIA, CALIFORNIA**



**MAY 12, 2021**

# **1. INTRODUCTION**

## **Project Description:**

The proposed project would develop a medical and mixed-use development and would construct fifteen (15) buildings consisting of medical outpatient clinic services, hotel and conference center, specialized education, retail, medical office, skilled nursing and assisted living, and multi-family residential uses, as well as a bio infiltration basin, associated open space, circulation and parking, and infrastructure improvements.

The proposed project would include the following: a 22,525-square-foot ambulatory surgery center; a 12,445-square-foot specialty clinic; two 12,445-square-foot medical office buildings; a 12,445-square-foot psychiatric health facility; a 10,000-square-foot, a four-story 105-room hotel with a conference center and pool; a 35,000-square-foot nursing college; four 15,55-square-foot strip retail buildings; two 15,000-square-foot retail/drive-through/medical commercial buildings; a 54,611-square-foot skilled nursing facility; a 34,480-square-foot memory care facility; a three-story 90-unit multi-family apartment; two 11,000 medical/commercial buildings; and a 5-acre bio infiltration basin.

## **Environmental Noise Assessment:**

This environmental noise assessment has been prepared to determine if significant noise impacts will be produced by the project and to describe mitigation measures for noise if significant impacts are determined. The environmental noise assessment, prepared by WJV Acoustics, Inc. (WJVA), is based upon the project Site Plan provided by the applicant (Figure 1), traffic data provided by VRPA Technologies, Inc. and a project site visit on May 5-6, 2021. Revisions to the Site Plan, project traffic information or other project-related information available to WJVA at the time the analysis was prepared may require a reevaluation of the findings and/or recommendations of the report.

Appendix A provides definitions of the acoustical terminology used in this report. Unless otherwise stated, all sound levels reported in this analysis are A-weighted sound pressure levels in decibels (dB). A-weighting de-emphasizes the very low and very high frequencies of sound in a manner similar to the human ear. Most community noise standards utilize A-weighted sound levels, as they correlate well with public reaction to noise. Appendix B provides examples of sound levels for reference.



## **2. THRESHOLDS OF SIGNIFICANCE**

The CEQA Guidelines apply the following questions for the assessment of significant noise impacts for a project:

- a. Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?
- b. Would the project result in generation of excessive groundborne vibration or groundborne noise levels?
- c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

### **a. Noise Level Standards**

#### CITY OF HANFORD

##### **General Plan**

The City of Hanford Noise Element of the General Plan<sup>1</sup> (adopted April 2017) provides generalized Noise Goals and Policies for various noise sources and land uses, related to development within the City. These noise goals and policies are provided below.

##### **Noise Goals**

- Goal H7: Protection from the harmful and annoying effect of excessive noise.
- Goal H8: Protection of the City's economic base by preventing incompatible land uses from encroaching upon existing or planned noise-producing uses.

##### **Major Noise Sources**

- Policy H39 Aircraft Noise: Evaluate proposed development proposals against the land use policies of the Kings County Airport Land Use Compatibility Plan.
- Policy H40 Ground Transportation Noise: Limit the effects of vehicle noise generation by designating truck routes, limiting vehicle speeds, standards relating to vehicle noise emission levels and muffler systems.
- Policy H41 Interior Noise Exposure: Adopt State Noise Insulation Standards (California Code of Regulations, Title 24) and Chapter 35 of the Uniform Building Code (UBC)

concerning interior noise exposure for new single, multi-family housing, hotels and motels.

- Policy H42 Noise Evaluation for New Development: Evaluate proposed development proposals against existing and future noise levels from ground transportation noise sources.
- Policy H43 Non-Transportation Noise: Mitigate noise created by non-transportation noise sources so as not to exceed the maximum allowable interior and exterior noise level standards.

### **Noise Exposure**

- Policy H45 Minimizing Noise for Residences in Mixed-use Developments: Require mixed-use projects to minimize noise exposure within the indoor areas of residential areas through design and construction techniques such as separating residential space from mechanical equipment, loading bays, and parking lots, and through management and operating procedures.

The 2017 General Plan does not provide specific noise standards applicable to development projects. Therefore, WJVA consulted with City staff who provided the noise level standards from the City's 2002 General Plan. The standards provided in the 2002 General Plan are the same as those provided in the Kings County General Plan, and will be considered the applicable standards for this project.

The 2002 General Plan provided noise level compatibility standards for transportation and non-transportation (stationary) noise sources. Table 1 provides the City of Hanford 2002 General Plan noise standards for transportation noise sources and Table 2 provides the City of Hanford 2002 General Plan noise standards for non-transportation (stationary) noise sources.

For transportation noise sources, the General Plan sets noise compatibility standards for transportation noise sources in terms of the Day-Night Average Level ( $L_{dn}$ ) or CNEL. The  $L_{dn}$  represents the time-weighted energy average noise level for a 24-hour day, with a 10 dB penalty added to noise levels occurring during the nighttime hours (10:00 p.m.-7:00 a.m.). The  $L_{dn}$  represents cumulative exposure to noise over an extended period of time and are therefore calculated based upon *annual average* conditions. For non-transportation (stationary) noise sources, the General plan sets noise compatibly standards in terms of the  $L_{max}$  (maximum) and  $L_{eq}$  (equivalent sound level) metrics.

**TABLE 1**  
**CITY OF HANFORD**  
**MAXIMUM ALLOWABLE NOISE EXPOSURE**  
**TRANSPORTATION NOISE SOURCES**

| Land Use                           | Outdoor Activity Areas <sup>a</sup><br>L <sub>dn</sub> /CNEL, dB | Interior Spaces           |                                   |
|------------------------------------|------------------------------------------------------------------|---------------------------|-----------------------------------|
|                                    |                                                                  | L <sub>dn</sub> /CNEL, dB | L <sub>eq</sub> , dB <sup>b</sup> |
| Residential                        | 60 <sup>c</sup>                                                  | 45                        | --                                |
| Transient Lodging                  | 60 <sup>c</sup>                                                  | 45                        | --                                |
| Hospitals, Nursing Homes           | 60 <sup>c</sup>                                                  | 45                        | --                                |
| Theaters, Auditoriums, Music Halls | --                                                               | --                        | 35                                |
| Churches, Meeting Halls            | 60 <sup>c</sup>                                                  | --                        | 40                                |
| Office Buildings                   | --                                                               | --                        | 45                                |
| Schools, Libraries, Museums        | --                                                               | --                        | 45                                |
| Playgrounds, Neighborhood Parks    | 70                                                               | --                        | --                                |

Notes:

a Where the location of outdoor activity areas is unknown, the exterior noise-level standard shall be applied to the property line of the receiving land use.

b As determined for a typical worst case hour during periods of use.

c Where it is not possible to reduce noise in outdoor activity areas to 60 dB L<sub>dn</sub>/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB L<sub>dn</sub>/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

Source: City of Hanford 2002 General Plan

**TABLE 2**  
**CITY OF HANFORD**  
**NOISE-LEVEL PERFORMANCE STANDARDS FOR NEW PROJECTS AFFECTED**  
**BY OR INCLUDING NON-TRANSPORTATION (STATIONARY) NOISE SOURCES**

| Category                                      | Noise-Level Descriptor | Exterior Noise Level Standard<br>(Applicable at Property Line) |           | Interior Noise Level Standard |           |
|-----------------------------------------------|------------------------|----------------------------------------------------------------|-----------|-------------------------------|-----------|
|                                               |                        | Daytime                                                        | Nighttime | Daytime                       | Nighttime |
| Residential                                   | L <sub>eq</sub>        | 50                                                             | 45        | 40                            | 35        |
|                                               | L <sub>max</sub>       | 70                                                             | 65        | 60                            | 55        |
| Transient Lodging<br>Hospitals, Nursing Homes | L <sub>eq</sub>        | --                                                             | --        | 40                            | 35        |
|                                               | L <sub>max</sub>       | --                                                             | --        | 60                            | 55        |
| Theaters, Auditoriums,<br>Music Halls         | L <sub>eq</sub>        | --                                                             | --        | 35                            | 35        |
| Churches, Meeting Halls                       | L <sub>eq</sub>        | --                                                             | --        | 40                            | 40        |
| Office Buildings                              | L <sub>eq</sub>        | --                                                             | --        | 45                            | --        |
| Schools, Libraries,<br>Museums                | L <sub>eq</sub>        | --                                                             | --        | 45                            | --        |
| Playgrounds,<br>Neighborhood Parks            | L <sub>eq</sub>        | 65                                                             | --        | --                            | --        |

Notes:

Notes: Each of the noise levels specified above shall be lowered by 5 dB for simple tone noises, noises consisting primarily of speech or music, or recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).

Source: City of Hanford 2002 General Plan

## State of California

There are no state noise standards that are applicable to the project.

## Federal Noise Standards

There are no federal noise standards that are applicable to the project.

### **b. Construction Noise and Vibration**

Section 9.10.060(10) (Noises Prohibited) of the City of Hanford Municipal Code<sup>2</sup> provides limitations on hours of construction. The Municipal codes states that the following is prohibited:

*The construction, demolition, alteration or repair of any building or the excavation of streets and highways other than between the hours of 7:00 a.m. and 8:00 p.m.*

Additional guidance can be provided by section 14-8.02A of the California Department of Transportation (Caltrans) Standard Specifications document which suggests that construction equipment should *not exceed 86 dBA  $L_{max}$  at a distance of 50 feet from job site activities from 9 p.m. to 6 a.m.*

There are no state or federal standards that specifically address construction vibration. Some guidance is provided by the Caltrans Transportation and Construction Vibration Guidance Manual<sup>3</sup>. The Manual provides guidance for determining annoyance potential criteria and damage potential threshold criteria. These criteria are provided below in Table 3 and Table 4, and are presented in terms of peak particle velocity (PPV) in inches per second (in/sec).

| TABLE 3                                          |                      |                                          |
|--------------------------------------------------|----------------------|------------------------------------------|
| GUIDELINE VIBRATION ANNOYANCE POTENTIAL CRITERIA |                      |                                          |
| Human Response                                   | Maximum PPV (in/sec) |                                          |
|                                                  | Transient Sources    | Continuous/Frequent Intermittent Sources |
| Barely Perceptible                               | 0.04                 | 0.01                                     |
| Distinctly Perceptible                           | 0.25                 | 0.04                                     |
| Strongly Perceptible                             | 0.9                  | 0.1                                      |
| Severe                                           | 2.0                  | 0.4                                      |

Source: Caltrans

| TABLE 4                                                  |                      |                                          |
|----------------------------------------------------------|----------------------|------------------------------------------|
| GUIDELINE VIBRATION DAMAGE POTENTIAL THRESHOLD CRITERIA  |                      |                                          |
| Structure and Condition                                  | Maximum PPV (in/sec) |                                          |
|                                                          | Transient Sources    | Continuous/Frequent Intermittent Sources |
| Extremely fragile, historic buildings, ancient monuments | 0.12                 | 0.08                                     |
| Fragile buildings                                        | 0.2                  | 0.1                                      |
| Historic and some old buildings                          | 0.5                  | 0.25                                     |
| Older residential structures                             | 0.5                  | 0.3                                      |
| New residential structures                               | 1.0                  | 0.5                                      |
| Modern industrial/commercial buildings                   | 2.0                  | 0.5                                      |
| Source: Caltrans                                         |                      |                                          |

### **3. SETTING**

The proposed Hanford Place Mixed-Use project site is situated north of State Route 198 (SR 198) in the southwest section of the City of Hanford. The project site is generally bound by SR 198 to the south, San Joaquin Valley Railroad (SJVR) to the north, and existing retail shopping center to the east, with a mini-storage facility and former amusement/water park located west of the project site.

The project consists of approximately 43 acres and is currently undeveloped land. In addition to the above-described adjacent land uses, there are existing residential land uses located to the north (across the SJVR line) and the south (across SR 198), along with a car dealership, hotel and other retail and commercial land uses as well.

#### **a. Background Noise Level Measurements**

Existing noise levels in the project vicinity are dominated by traffic noise along SR 198 and other local roadways as well railroad operations associated with the San Joaquin Valley Railroad (SJVR) and occasional aircraft overflights associated with Lemoore Naval Air Station and other local airports and airstrips. Measurements of existing ambient noise levels in the project vicinity were conducted between May 5, 2021 and May 6, 2021. Long-term (24-hour) ambient noise level measurements were conducted at two (2) locations (sites LT-1 and LT-2) within and adjacent to the project site. Ambient noise levels were measured for a period of 48 continuous hours at monitoring site LT-1 and LT-2.

Ambient noise monitoring equipment consisted of Larson-Davis Laboratories Model LDL 820 sound level analyzers equipped with Bruel & Kjaer (B&K) Type 4176 ½" microphones. The monitors were calibrated with a B&K Type 4230 acoustical calibrator to ensure the accuracy of the measurements. The equipment complies with applicable specifications of the American National Standards Institute (ANSI) for Type 1 (precision) sound level meters.

Site LT-1 was located within the central portion of the project site, approximately 300 feet from the centerline of SR 198. Site LT-1 was exposed to traffic noise associated with vehicles on SR 198, as well as train operations along the SJVR line and occasional aircraft overflights. Site LT-2 was located near the northern portion of the project site, adjacent to the existing residential land uses, and approximately fifty (50) feet from the SJVR line. The locations of the long-term noise monitoring sites are provided on Figure 2.

Measured hourly energy average noise levels ( $L_{eq}$ ) at site LT-1 ranged from a low of 56.8 dB between 1:00 a.m. and 2:00 a.m. on May 5<sup>th</sup> to a high of 68.2 dBA between 8:00 a.m. and 9:00 a.m. on May 6<sup>th</sup>. Hourly maximum ( $L_{max}$ ) noise levels at site LT-1 ranged from 69.4 to 96.4 dBA. Residual noise levels at the monitoring site, as defined by the  $L_{90}$ , ranged from 43.3 to 64.1 dBA. The  $L_{90}$  is a statistical descriptor that defines the noise level exceeded 90% of the time during each hour of the sample period. The  $L_{90}$  is generally considered to represent the residual (or

background) noise level in the absence of identifiable single noise events from traffic, aircraft and other local noise sources. The measured  $L_{dn}$  value at site LT-1 for May 5<sup>th</sup> and May 6<sup>th</sup> was 68.8 dB  $L_{dn}$  and 68.9 dB  $L_{dn}$ , respectively. Figure 3 graphically depicts hourly variations in ambient noise levels at site LT-1 for each of the two monitoring days. Table 5 provides the measured hourly noise levels at ambient noise monitoring site LT-1, in terms of the City's noise standards (as described above in Table 2).

| <p><b>TABLE 5</b></p> <p><b>SUMMARY OF 24-HOUR AMBIENT NOISE MEASUREMENT DATA, SITE LT-1</b></p> <p><b>HANFORD PLACE</b></p> <p><b>MAY 5 &amp; 6, 2021</b></p> |                          |                  |                  |                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|------------------|------------------|------------------|
| Time                                                                                                                                                           | A-Weighted Decibels, dBA |                  |                  |                  |
|                                                                                                                                                                | May 5, 2021              |                  | May 6, 2021      |                  |
|                                                                                                                                                                | $L_{eq}$                 | $L_{max}$        | $L_{eq}$         | $L_{max}$        |
| 0:00:00                                                                                                                                                        | 57.0                     | 71.4             | 56.9             | 74.7             |
| 1:00:00                                                                                                                                                        | 56.8                     | 69.6             | 57.0             | 81.1             |
| 2:00:00                                                                                                                                                        | 58.1                     | 75.4             | 58.1             | 76.4             |
| 3:00:00                                                                                                                                                        | 57.6                     | 81.4             | 57.9             | 72.3             |
| 4:00:00                                                                                                                                                        | 62.4                     | 81.1             | 62.7             | 69.9             |
| 5:00:00                                                                                                                                                        | 65.5                     | 76.4             | 64.8             | 72.8             |
| 6:00:00                                                                                                                                                        | 66.0                     | 77.7             | 66.0             | 83.6             |
| 7:00:00                                                                                                                                                        | 66.4                     | 76.2             | 66.1             | 76.0             |
| 8:00:00                                                                                                                                                        | 65.2                     | 83.2             | 65.0             | 77.0             |
| 9:00:00                                                                                                                                                        | 64.2                     | 79.9             | 67.5             | 75.5             |
| 10:00:00                                                                                                                                                       | 67.4                     | 82.0             | 64.5             | 79.6             |
| 11:00:00                                                                                                                                                       | 63.7                     | 86.8             | 63.4             | 83.4             |
| 12:00:00                                                                                                                                                       | 61.1                     | 88.0             | 63.1             | 77.1             |
| 13:00:00                                                                                                                                                       | 63.2                     | 77.3             | 63.4             | 73.5             |
| 14:00:00                                                                                                                                                       | 64.0                     | 82.5             | 63.9             | 74.9             |
| 15:00:00                                                                                                                                                       | 66.2                     | 81.8             | 66.1             | 76.2             |
| 16:00:00                                                                                                                                                       | 66.0                     | 79.4             | 66.5             | 74.8             |
| 17:00:00                                                                                                                                                       | 65.9                     | 78.0             | 66.4             | 82.8             |
| 18:00:00                                                                                                                                                       | 63.7                     | 69.4             | 66.1             | 80.4             |
| 19:00:00                                                                                                                                                       | 63.1                     | 77.3             | 65.2             | 83.2             |
| 20:00:00                                                                                                                                                       | 63.2                     | 79.8             | 63.0             | 77.7             |
| 21:00:00                                                                                                                                                       | 63.6                     | 79.1             | 62.3             | 75.4             |
| 22:00:00                                                                                                                                                       | 61.5                     | 77.0             | 61.8             | 87.2             |
| 23:00:00                                                                                                                                                       | 58.1                     | 75.6             | 59.6             | 79.1             |
| Daytime (7 am to 10 pm)<br>Average (Range)                                                                                                                     | 64.5 (61.1-67.4)         | 81.0 (69.4-90.4) | 65.0 (62.3-68.2) | 79.1 (73.5-96.4) |
| Nighttime (10 pm to 7 am)<br>Average (Range)                                                                                                                   | 60.3 (56.8-66.0)         | 76.2 (69.6-81.4) | 60.5 (56.9-66.0) | 77.5 (69.9-87.2) |

Source: WJV Acoustics, Inc.

Measured hourly energy average noise levels ( $L_{eq}$ ) at site LT-2 ranged from a low of 42.9 dB between midnight and 1:00 a.m. on May 5<sup>th</sup> to a high of 75.2 dBA between 8:00 a.m. and 9:00 p.m. on May 6<sup>th</sup>. Hourly maximum ( $L_{max}$ ) noise levels at site LT-2 ranged from 61.3 to 113.2 dBA.



Residual noise levels at the monitoring site, as defined by the  $L_{90}$ , ranged from 68.7 to 57.0 dBA. The measured  $L_{dn}$  value at site LT-2 for May 5<sup>th</sup> and May 6<sup>th</sup> was 67.6 dB  $L_{dn}$  and 64.9 dB  $L_{dn}$ , respectively. Figure 4 graphically depicts hourly variations in ambient noise levels at site LT-2 for each of the two monitoring days. Table 6 provides the measured hourly noise levels at ambient noise monitoring site LT-2, in terms of the City's performance standards (as described above in Table 2).

| <p><b>TABLE 6</b></p> <p><b>SUMMARY OF 24-HOUR AMBIENT NOISE MEASUREMENT DATA, SITE LT-2</b></p> <p><b>HANFORD PLACE</b></p> <p><b>MAY 5 &amp; 6, 2021</b></p> |                          |                   |                  |                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-------------------|------------------|-------------------|
| Time                                                                                                                                                           | A-Weighted Decibels, dBA |                   |                  |                   |
|                                                                                                                                                                | May 5, 2021              |                   | May 6, 2021      |                   |
|                                                                                                                                                                | $L_{eq}$                 | $L_{max}$         | $L_{eq}$         | $L_{max}$         |
| 0:00:00                                                                                                                                                        | 54.7                     | 67.6              | 42.9             | 62.8              |
| 1:00:00                                                                                                                                                        | 49.7                     | 66.9              | 44.3             | 61.3              |
| 2:00:00                                                                                                                                                        | 51.8                     | 62.4              | 46.7             | 63.7              |
| 3:00:00                                                                                                                                                        | 48.5                     | 65.2              | 48.3             | 63.0              |
| 4:00:00                                                                                                                                                        | 55.8                     | 81.2              | 54.5             | 72.8              |
| 5:00:00                                                                                                                                                        | 61.3                     | 78.6              | 62.6             | 82.8              |
| 6:00:00                                                                                                                                                        | 57.6                     | 67.0              | 58.7             | 74.5              |
| 7:00:00                                                                                                                                                        | 59.8                     | 79.5              | 56.0             | 74.7              |
| 8:00:00                                                                                                                                                        | 59.0                     | 83.1              | 75.2             | 113.2             |
| 9:00:00                                                                                                                                                        | 57.2                     | 74.2              | 56.1             | 74.8              |
| 10:00:00                                                                                                                                                       | 77.5                     | 106.8             | 56.5             | 78.6              |
| 11:00:00                                                                                                                                                       | 59.7                     | 82.8              | 57.8             | 84.1              |
| 12:00:00                                                                                                                                                       | 57.7                     | 77.6              | 60.2             | 83.9              |
| 13:00:00                                                                                                                                                       | 55.5                     | 77.2              | 58.4             | 81.3              |
| 14:00:00                                                                                                                                                       | 56.5                     | 72.7              | 54.7             | 69.9              |
| 15:00:00                                                                                                                                                       | 55.7                     | 72.9              | 60.0             | 86.2              |
| 16:00:00                                                                                                                                                       | 56.7                     | 73.9              | 56.8             | 77.7              |
| 17:00:00                                                                                                                                                       | 75.9                     | 104.9             | 55.8             | 72.4              |
| 18:00:00                                                                                                                                                       | 56.1                     | 73.4              | 56.2             | 73.1              |
| 19:00:00                                                                                                                                                       | 57.6                     | 80.1              | 56.8             | 84.3              |
| 20:00:00                                                                                                                                                       | 56.5                     | 76.2              | 54.0             | 68.6              |
| 21:00:00                                                                                                                                                       | 57.1                     | 76.4              | 55.9             | 65.2              |
| 22:00:00                                                                                                                                                       | 56.8                     | 79.2              | 53.6             | 63.7              |
| 23:00:00                                                                                                                                                       | 53.8                     | 69.0              | 53.6             | 69.2              |
| Daytime (7 am to 10 pm)<br>Average (Range)                                                                                                                     | 59.9 (55.5-77.5)         | 80.8 (72.7-106.8) | 58.0 (54.0-75.2) | 79.2 (65.2-113.2) |
| Nighttime (10 pm to 7 am)<br>Average (Range)                                                                                                                   | 54.4 (48.5-61.3)         | 70.8 (62.4-81.2)  | 51.7 (42.9-62.6) | 68.2 (61.3-82.8)  |

Source: WJV Acoustics, Inc.

Additionally, short-term (15-minute) ambient noise level measurements were conducted at four (4) locations (Sites ST-1 through ST-4). Two (2) individual measurements were taken at each of

the four short-term sites to quantify ambient noise levels in the morning and afternoon hours. The locations of the long-term and short-term noise monitoring sites are shown in Figure 2.

Table 7 summarizes short-term noise measurement results. The noise measurement data included energy average ( $L_{eq}$ ) maximum ( $L_{max}$ ) as well as five individual statistical parameters. Observations were made of the dominant noise sources affecting the measurements. The statistical parameters describe the percent of time a noise level was exceeded during the measurement period. For instance, the  $L_{90}$  describes the noise level exceeded 90 percent of the time during the measurement period, and is generally considered to represent the residual (or background) noise level in the absence of identifiable single noise events from traffic, aircraft and other local noise sources.

Short-term noise measurements were conducted for 15-minute periods at each of the four sites. Sites ST-1 was located near the northeast portion of the project site, in the vicinity of existing retail/commercial land uses adjacent to the project site. Site ST-2 was located near the project site access point along Campus Drive. Site ST-3 was located near the northwestern portion of the project site, in the parking lot of Adventist Health Hospital. Site ST-4 was located at the intersection of Campus Drive and 7<sup>th</sup> Street, north of the project site. The overall noise measurement data indicate that noise in the project vicinity is highly influenced by vehicular traffic and noise associated with landscaping activities, retail/commercial activities and other sources typical of residential land uses (barking dogs, roosters, birds, voices, etc.).

| <p><b>TABLE 7</b></p> <p><b>SUMMARY OF SHORT-TERM NOISE MEASUREMENT DATA</b></p> <p><b>HANFORD PLACE</b></p> <p><b>MAY 5 &amp; 6, 2021</b></p> |           |                          |           |       |       |          |          |          |           |
|------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------------------|-----------|-------|-------|----------|----------|----------|-----------|
| Site                                                                                                                                           | Time      | A-Weighted Decibels, dBA |           |       |       |          |          |          | Sources   |
|                                                                                                                                                |           | $L_{eq}$                 | $L_{max}$ | $L_2$ | $L_8$ | $L_{25}$ | $L_{50}$ | $L_{90}$ |           |
| ST-1                                                                                                                                           | 7:35 a.m. | 51.8                     | 56.0      | 54.7  | 53.5  | 52.3     | 51.6     | 50.1     | TR, V, R  |
| ST-1                                                                                                                                           | 4:25 p.m. | 53.7                     | 62.1      | 55.4  | 54.1  | 53.3     | 52.0     | 49.8     | TR, D, AC |
| ST-2                                                                                                                                           | 8:05 a.m. | 62.6                     | 76.3      | 72.0  | 68.1  | 61.1     | 53.0     | 50.3     | TR, AG    |
| ST-2                                                                                                                                           | 4:45 p.m. | 56.7                     | 62.3      | 55.0  | 54.1  | 53.2     | 49.7     | 48.5     | TR        |
| ST-3                                                                                                                                           | 8:30 a.m. | 51.9                     | 70.1      | 55.0  | 52.0  | 49.9     | 49.3     | 48.2     | TR, V, B  |
| ST-3                                                                                                                                           | 5:10 p.m. | 52.1                     | 66.6      | 54.7  | 52.2  | 48.9     | 47.8     | 47.0     | TR, AC    |
| ST-4                                                                                                                                           | 8:50 a.m. | 60.3                     | 77.0      | 69.6  | 63.4  | 59.1     | 55.3     | 50.8     | TR, B, D  |
| ST-4                                                                                                                                           | 5:30 p.m. | 61.4                     | 74.2      | 71.0  | 65.2  | 60.7     | 56.3     | 51.4     | TR, AC, D |

TR: Traffic AC: Aircraft AG: Agricultural Activities V: Voices B: Birds D: Barking Dogs R:Rooster  
Source: WJV Acoustics, Inc.

#### **4. NOISE IMPACTS TO OFF-SITE SENSITIVE RECEPTORS, AND MITIGATION MEASURES**

##### **a. Project Traffic Noise Impacts on Existing Noise-Sensitive Land Uses Outside Project Site (Less Than Significant)**

WJVA utilized the FHWA Traffic Noise Model<sup>4</sup> to quantify expected project-related increases in traffic noise exposure along roadways in the project vicinity. The FHWA Model is a standard analytical method used by state and local agencies for roadway traffic noise prediction. The model is based upon reference energy emission levels for automobiles, medium trucks (2 axles) and heavy trucks (3 or more axles), with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site. The FHWA Model was developed to predict hourly  $L_{eq}$  values for free-flowing traffic conditions, and is generally considered to be accurate within  $\pm 1.5$  dB. To predict  $L_{dn}$  values, it is necessary to determine the hourly distribution of traffic for a typical day and adjust the traffic volume input data to yield an equivalent hourly traffic volume.

Average Daily Traffic (ADT) volumes for the analyzed receptor locations were provided by the project traffic consultant, VRPA Technologies, Inc.<sup>5</sup>. Truck percentages and the day/night distribution of traffic were estimated by WJVA, based upon previous studies conducted in the project vicinity since project-specific data were not available from government sources. The Noise modeling assumptions used to calculate project traffic noise are provided as Appendix C.

Traffic noise exposure levels for specific scenarios were calculated based upon the FHWA Model and the above-described model inputs and assumptions. Project-related significant impacts would occur if an increase in traffic noise associated with the project would result in noise levels exceeding the City's applicable noise level standards at the location(s) of sensitive receptors. For the purpose of this analysis a significant impact was also assumed to occur if traffic noise levels were to increase by 3 dB at sensitive receptor locations where noise levels already exceed the City's applicable noise level standards (without the project), as 3 dB generally represents the threshold of perception in change for the human ear.

The City's exterior noise level standard for residential land uses is 60 dB  $L_{dn}$  (an exterior noise exposure of up to 65 dB  $L_{dn}$  is allowed in instances where it is not possible to reduce noise exposure in outdoor activity areas to 60  $L_{dn}$  or less using a practical application of available noise reduction measures.). Traffic noise was modeled at seven (7) receptor locations. The seven modeled receptors are located at roadway setback distances representative of the sensitive receptors (residences) along each analyzed roadway segment. The receptor locations are described below and provided graphically on Figure 5.

- R-1: Residential land use located approximately 90 feet from the centerline of Lacey Blvd.
- R-2: Residential land use located approximately 60 feet from the centerline of 7<sup>th</sup> St.
- R-3: Residential land use located approximately 95 feet from the centerline of 7<sup>th</sup> St.
- R-4: Residential land use located approximately 60 feet from the centerline of 6<sup>th</sup> St.
- R-5: Residential land use located approximately 100 feet from the centerline of Campus Dr.

- R-6: Residential land use located approximately 95 feet from the centerline of 7<sup>th</sup> St.
- R-7: Residential land use located approximately 90 feet from the centerline of 6<sup>th</sup> St.

### **Existing Conditions**

Table 8 provides Existing and Existing Plus Project traffic noise exposure levels at the seven analyzed receptor locations. The receptor locations are representative of existing residential land uses located along the analyzed roadway segments.

| <p style="text-align: center;"><b>TABLE 8</b></p> <p style="text-align: center;"><b>PROJECT-RELATED INCREASES IN TRAFFIC NOISE, dB, L<sub>dn</sub></b></p> <p style="text-align: center;"><b>HANFORD PLACE</b></p> <p style="text-align: center;"><b>EXISTING CONDITIONS</b></p> |                 |                              |                         |                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------------------|-------------------------|----------------------------|
| <b>Modeled Receptor</b>                                                                                                                                                                                                                                                          | <b>Existing</b> | <b>Existing Plus Project</b> | <b>Change (Maximum)</b> | <b>Significant Impact?</b> |
| R-1                                                                                                                                                                                                                                                                              | 63              | 63                           | 0                       | No                         |
| R-2                                                                                                                                                                                                                                                                              | 62              | 62                           | 0                       | No                         |
| R-3                                                                                                                                                                                                                                                                              | 58              | 59                           | +1                      | No                         |
| R-4                                                                                                                                                                                                                                                                              | 55              | 58                           | +3                      | No                         |
| R-5                                                                                                                                                                                                                                                                              | 51              | 51                           | 0                       | No                         |
| R-6                                                                                                                                                                                                                                                                              | 59              | 59                           | 0                       | No                         |
| R-7                                                                                                                                                                                                                                                                              | 52              | 52                           | 0                       | No                         |

Source: WJV Acoustics, Inc.  
VRPA Technologies, Inc.

Reference to Table 8 indicates that project-related traffic would not result in noise levels at any sensitive receptors to exceed the City's noise level standard, nor result in an increase of 3 dB in any sensitive receptor locations where noise levels already exceed the City's noise level standard without the implementation of the project.

### **Cumulative 2042 Conditions**

Table 9 provides Cumulative 2042 traffic noise exposure levels at the seven analyzed representative receptor locations, and also provides what the project contribution would be to Cumulative 2042 traffic noise exposure conditions.

| <p style="text-align: center;"><b>TABLE 9</b></p> <p style="text-align: center;"><b>PROJECT CONTRIBUTION TO CUMULATIVE TRAFFIC NOISE, dB, L<sub>dn</sub></b></p> <p style="text-align: center;"><b>HANFORD PLACE</b></p> <p style="text-align: center;"><b>CUMULATIVE CONDITIONS</b></p> |                                                    |                       |                      |                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|-----------------------|----------------------|---------------------|
| Modeled Receptor                                                                                                                                                                                                                                                                         | Cumulative Conditions Without Project Contribution | Cumulative Conditions | Project Contribution | Significant Impact? |
| R-1                                                                                                                                                                                                                                                                                      | 64                                                 | 64                    | 0                    | No                  |
| R-2                                                                                                                                                                                                                                                                                      | 64                                                 | 64                    | 0                    | No                  |
| R-3                                                                                                                                                                                                                                                                                      | 60                                                 | 60                    | 0                    | No                  |
| R-4                                                                                                                                                                                                                                                                                      | 56                                                 | 59                    | +3                   | No                  |
| R-5                                                                                                                                                                                                                                                                                      | 53                                                 | 53                    | 0                    | No                  |
| R-6                                                                                                                                                                                                                                                                                      | 61                                                 | 61                    | 0                    | No                  |
| R-7                                                                                                                                                                                                                                                                                      | 54                                                 | 54                    | 0                    | No                  |

Source: WJV Acoustics, Inc.  
VRPA Technologies, Inc.

Reference to Table 9 indicates that the project's contribution to Cumulative 2042 traffic noise exposure levels at the modeled representative receptor locations would not result in noise levels to exceed the City's noise level standard, nor result in an increase of 3 dB in any sensitive receptor locations where noise levels already exceed the City's noise level standard without the implementation of the project. Consequently, the project contribution to cumulative noise levels would be less than considerable and the project would not have a significant cumulative impact.

Noise levels described in Table 8 and Table 9 do not take into account any site-specific acoustic shielding that may be provided by existing sound walls, buildings or intervening topography, and should therefore be considered a worst-case assessment of traffic noise exposure at the analyzed receptor locations.

#### **b. Proposed Impacts From Operational On-Site Sources (Less Than Significant With Mitigation)**

The project would include a variety of medical buildings, hotel and conference center, medical instruction facilities, retail/drive thru buildings, commercial buildings and a multi-family apartment building. A wide variety of noise sources can be associated with these land use designations. The noise levels produced by such sources can also be highly variable and could potentially impact existing off-site and proposed on-site sensitive receptors. Typical examples of stationary noise sources associated with such land uses include:

- HVAC/Mechanical equipment
- Truck deliveries
- Parking lot activities (closing of car doors and trunks, stereos, alarms etc.)
- Drive Thru operations

### **Mechanical Equipment**

It is assumed that the project would include roof-mounted HVAC units on the proposed buildings. The heating, ventilating, and air conditioning (HVAC) requirements for the buildings would likely require the use of multiple packaged roof-top units. For the purpose of noise and aesthetics, roof-mounted HVAC units are typically shielded by means of a roof parapet. WJVA has conducted reference noise level measurements at numerous commercial and retail buildings with roof-mounted HVAC units, and associated noise levels typically range between approximately 45-50 dB at a distance of 50 feet from the building façade.

For this project, the closest residential property lines to any potential roof-mounted HVAC equipment would be located at a minimum setback distance of 200 feet. Taking into account the standard rate of noise attenuation with increased distance from a point source (-6 dB/doubling of distance), noise levels associated with the operation of roof-mounted HVAC units would be approximately 33-38 dB at the closest sensitive receptor property line. Such levels do not exceed any City of Hanford noise level standard or exceed existing (without project) ambient noise levels.

### **Truck Movements**

At the time of this analysis, a specific truck access route (or routes) had not been designated. However, trucks would access the project site by one of three (3) access points, Glendale Avenue from the west, Campus Drive from the north or 5<sup>th</sup> Street from the east. It is assumed that truck deliveries would occur at various times and locations throughout the overall project area. Precise details on truck deliveries were not known at the time of this analysis.

WJVA has conducted measurements of the noise levels produced by slowly moving trucks for a number of studies. Such truck movements would be expected to produce noise levels in the range of 65 to 71 dBA at a distance of 100 feet. The range in measured truck noise levels is due to differences in the size of trucks, their speed of movement and whether they have refrigeration units in operation during the pass-by.

If truck movements were to access the project site via the 5<sup>th</sup> Street access point, truck movements could occur as close as approximately 130 feet from the closest residential property lines to the north. At this distance, noise levels associated with truck movements would produce maximum noise levels in the range of approximately 63 to 69 dB. Such noise levels do not exceed the City's daytime (7:00 a.m. to 10:00 p.m.) noise level standard of 70 dB  $L_{max}$ , but could potentially exceed the City's nighttime (10:00 p.m. to 7:00 a.m.) noise level standard of 65 dB  $L_{max}$ . It should be noted that existing ambient noise levels in the vicinity of the future 5<sup>th</sup> Street access point (noise monitoring site LT-2) exceeded the City's nighttime 65 dB  $L_{max}$  standard during twelve of the eighteen nighttime hours measured over the two-day monitoring period.

### **Potential Impact:**

Noise levels associated with truck movements could exceed the City's 65 dB  $L_{max}$  nighttime noise level standard at the residential property lines north of the 5<sup>th</sup> Street access point, if truck deliveries were to occur between the nighttime hours of 10:00 p.m. to 7:00 a.m.

**Mitigation Measures:**

Noise levels associated with nighttime (10:00 p.m. to 7:00 a.m.) truck movements could be mitigated by applying the following condition:

- Require truck movements occurring during nighttime hours of 10:00 p.m. to 7:00 a.m. to use the Glendale Avenue access point only.

**Parking Lot Activities**

Noise due to traffic in parking lots is typically limited by low speeds and is not usually considered to be significant. Human activity in parking lots that can produce noise includes voices, stereo systems and the opening and closing of car doors and trunk lids. Such activities can occur at any time. The noise levels associated with these activities cannot be precisely defined due to variables such as the number of parking movements, time of day and other factors. It is typical for a passing car in a parking lot to produce a maximum noise level of 60 to 65 dBA at a distance of 50 feet, which is comparable to the level of a raised voice.

For this project, parking would be dispersed throughout the overall project area. The closest proposed parking areas would be located at least 150 feet from the closest existing residential property lines to the north. At this distance, maximum ( $L_{max}$ ) parking lot vehicle movements would be expected to be approximately 51 to 56 dB. Such levels would not exceed any of the City's applicable noise levels standards or exceed existing ambient noise levels at the closest residential land uses. Due to existing elevated ambient noise levels at the closest sensitive receptor locations (residential land uses north of the project site), noise levels associated with parking lot activities would generally not be audible over existing (without project) noise levels.

**Drive Thru Retail**

The proposed project would include two (2) retail areas that would likely include drive thru operations. While the exact tenants and type of retail store was not known at this time, it is assumed that amplified speech would be incorporated into drive thru operations.

In order to assess potential project noise levels associated with drive-thru operations, WJVA utilized reference noise levels measured at a Wendy's drive-thru restaurant located on South Mooney Boulevard in Visalia. Measurements were conducted during the early afternoon of July 11, 2011 between 12:45 p.m. and 1:45 p.m. using the previously-described noise monitoring equipment.

The microphone used by customers to order food and the loudspeaker used by employees to confirm orders are both integrated into a menu board that is located a few feet from the drive-thru lane at the approximate height of a typical car window. Vehicles would enter the drive-thru lane from the west and then turn to the north along the east side of the restaurant.

Reference noise measurements were obtained at a distance of approximately 40 feet from the menu board containing the microphone/loudspeaker system at an angle of about 45° toward the



rear of the vehicle being served. This provided a worst-case exposure to sound from the loudspeaker system since the vehicle was not located directly between the loudspeaker and measurement location. Cars were lined up in the access lane during the noise measurement period indicating that the drive-through lane was operating at or near a peak level of activity.

Each ordering cycle was observed to take approximately 60 seconds including vehicle movements. A typical ordering cycle included 5-10 seconds of loudspeaker use with typical maximum noise levels in the range of 60-62 dBA at the 40 foot-reference location. Vehicles moving through the drive-thru lane produced noise levels in the range of 55-60 dBA at the same distance. Vehicles parked at the ordering position (between the menu board and measurement site) were observed to provide significant acoustic shielding during the ordering sequence. The effects of such shielding are reflected by the noise measurement data. Noise levels were measured to approximately 60 dB  $L_{eq}$  at the measurement site, and included noise from all sources, including the loudspeaker, vehicle movements and HVAC equipment.

The closest noise-sensitive receptors (residential land uses) to the proposed retail drive thru operations are located approximately 190 feet to the north. At this setback distance, noise levels associated with drive thru retail operations would be expected to produce noise levels of approximately 47-49 dB  $L_{max}$  and approximately 46 dB  $L_{eq}$ . Potential project-related noise exposure at that locations of the closest residential land uses was calculated based upon the above-described reference noise measurement data, the existing sound walls and the normal rate of sound attenuation over distance for a "point" noise source (6 dB/doubling of distance).

It is unknown if nighttime operations would occur at the drive thru retail locations. The above-described noise level of 46 dB  $L_{eq}$  at the closest residential property line assumes the drive thru would be in constant operation, and should therefore we consider a worst-case assessment of drive thru noise levels. While drive thru operational noise levels (46 dB  $L_{eq}$ ) slightly exceed the City's nighttime noise level standard of 45 dB  $L_{eq}$ , such levels are below existing (without project) nighttime ambient noise levels at the residential property lines, and would therefore not be considered a significant impact.

### **c. Noise from Construction (Less Than Significant With Mitigation)**

Construction noise would occur at various locations within the project site through the buildout period and at locations where off-site infrastructure improvements may be required. Existing sensitive receptors could be located as close as 150 feet from construction activities. Table 10 provides typical construction-related noise levels at distances of 100 feet, 200 feet, and 300 feet.

Construction noise is not considered to be a significant impact if construction is limited to the allowed hours and construction equipment is adequately maintained and muffled. The City of Hanford limits hours of construction to occur only between the hours of 7:00 a.m. to 8:00 p.m. Construction noise impacts could result in annoyance or sleep disruption for nearby residents if nighttime operations were to occur or if equipment is not properly muffled or maintained.

**TABLE 10**  
**TYPICAL CONSTRUCTION EQUIPMENT**  
**MAXIMUM NOISE LEVELS, dBA**

| Type of Equipment   | 100 Ft. | 200 Ft. | 300 Ft. |
|---------------------|---------|---------|---------|
| Concrete Saw        | 84      | 78      | 74      |
| Crane               | 75      | 69      | 65      |
| Excavator           | 75      | 69      | 65      |
| Front End Loader    | 73      | 67      | 63      |
| Jackhammer          | 83      | 77      | 73      |
| Paver               | 71      | 65      | 61      |
| Pneumatic Tools     | 79      | 73      | 69      |
| Dozer               | 76      | 70      | 66      |
| Rollers             | 74      | 68      | 64      |
| Trucks              | 80      | 72      | 70      |
| Pumps               | 74      | 68      | 64      |
| Scrapers            | 81      | 75      | 71      |
| Portable Generators | 74      | 68      | 64      |
| Backhoe             | 80      | 74      | 70      |
| Grader              | 80      | 74      | 70      |

Source: FHWA

*Noise Control for Buildings and Manufacturing Plants, Bolt, Beranek & Newman, 1987*

### **Potential Impact:**

A noise impact could occur if construction activities do not incorporate appropriate mitigation measures and best management practices.

### **Mitigation Measures:**

Noise levels associated with construction activities may be effectively mitigated by incorporating noise mitigation measures and appropriate best management practices. The following mitigation measures and best management practices should be applied during periods of project construction.

- Per the City of Hanford Municipal Code, construction activities should not occur outside the hours of 7:00 a.m. to 8:00 p.m.
- All construction equipment shall be properly maintained and muffled as to minimize noise generation at the source.
- Noise-producing equipment shall not be operating, running, or idling while not in immediate use by a construction contractor.
- All noise-producing construction equipment shall be located and operated, to the extent possible, at the greatest possible distance from any noise-sensitive land uses.

- Locate construction staging areas, to the extent possible, at the greatest possible distances from any noise-sensitive land uses.
- Signs shall be posted at the construction site and near adjacent sensitive receptors displaying hours of construction activities and providing the contact phone number of a designated noise disturbance coordinator.

#### d. Vibration Impacts (Less Than Significant)

The dominant sources of man-made vibration are sonic booms, blasting, pile driving, pavement breaking, demolition, diesel locomotives, and rail-car coupling. None of these activities are anticipated to occur with construction or operation of the proposed project. Vibration from construction activities could be detected at the closest sensitive land uses, especially during movements by heavy equipment or loaded trucks and during some paving activities (if they were to occur). Typical vibration levels at distances of 100 feet and 300 feet are summarized by Table 11. These levels would not be expected to exceed any significant threshold levels for annoyance or damage, as provided above in Table 3 and Table 4.

| TABLE 11<br>TYPICAL VIBRATION LEVELS DURING CONSTRUCTION |              |         |
|----------------------------------------------------------|--------------|---------|
| Equipment                                                | PPV (in/sec) |         |
|                                                          | @ 100'       | @ 300'  |
| Bulldozer (Large)                                        | 0.011        | 0.006   |
| Bulldozer (Small)                                        | 0.0004       | 0.00019 |
| Loaded Truck                                             | 0.01         | 0.005   |
| Jackhammer                                               | 0.005        | 0.002   |
| Vibratory Roller                                         | .03          | 0.013   |
| Caisson Drilling                                         | .01          | 0.006   |

Source: *Caltrans*

After full project build out, it is not expected that ongoing operational activities will result in any vibration impacts at nearby sensitive uses. Activities involved in trash bin collection could result in minor on-site vibrations as the bin is placed back onto the ground. Such vibrations would not be expected to be felt at the closest off-site sensitive uses. Additional mitigation is not required.

## **5. NOISE IMPACTS TO PROPOSED ON-SITE SENSITIVE RECEPTORS, AND MITIGATION MEASURES**

The project includes proposed sensitive receptors (residential land uses, transient lodging, nursing homes, offices, etc.) that could be impacted by exterior and interior noise exposure associated with existing transportation noise sources (SR 198 and SJVR line). The applicable exterior and interior noise level standards for such land uses are provided above as Table 1.

### **a. Project Transportation Noise Impacts on Proposed On-Site Noise-Sensitive Land Uses (Less Than Significant With Mitigation)**

#### **Exterior Noise Exposure**

Exterior noise exposure within the project site is dominated by vehicle traffic associated with State Route 198 to the south and railroad operations associated with the San Joaquin Valley Railroad line to the north. Noise levels measured at ambient noise monitoring sites LT-1 and LT-2 indicate that overall project site noise exposure is approximately 65-70 dB  $L_{dn}$ .

The exterior noise level standard applicable to the above-described sensitive receptors is 60 dB  $L_{dn}$ . The General Plan also states that where it is not possible to reduce noise in outdoor activity areas to 60 dB  $L_{dn}$ /CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB  $L_{dn}$ /CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

Exterior noise level compatibility standards for transportation noise sources are applied at the outdoor activity areas of sensitive receptors. Outdoor activity areas typically include backyards of single-family residential uses and outdoor common use areas (pools, BBQ/picnic areas, playgrounds, etc.) as well as individual patios, balconies and decks of multi-family residential uses and transient lodging land uses. The exact locations of such outdoor activity areas were not known at the time of this analysis; however, the project site plan (Figure 1) provides preliminary locations of pool areas for both the apartment development and the hotel development. Other proposed sensitive receptors (memory care facility, assisted living facility, skilled nursing facility, etc.) may also include outdoor activity areas, at which this exterior noise level standard would apply.

#### **Potential Impact:**

Transportation noise exposure levels would be expected to exceed the City's 60 dB  $L_{dn}$  exterior noise level standard at outdoor activity areas associated with the multi-family apartment land use and the hotel land use. Additionally, depending on the locations (if included into final project design) of any outdoor activity areas associated with other noise-sensitive land uses (as defined above in Table 1), transportation noise exposure levels could exceed the City's exterior noise level standard at such land uses as well.

**Mitigation Measures:**

Based upon project site noise exposure (approximately 65-70 dB  $L_{dn}$ ) and the preliminary locations of the apartment and hotel pool areas (outdoor activity areas), mitigating exterior noise levels at these locations to at or below 60 dB  $L_{dn}$  would likely not be feasible. However, a preliminary analysis using a sound wall insertion loss model indicates that a sound wall constructed to a minimum height of six-and-a-half (6.5) feet above ground level constructed around the two pool areas (apartment and hotel land uses) would mitigate exterior noise levels to below 65 dB  $L_{dn}$  within these outdoor activity areas.

Other proposed sensitive receptors (memory care facility, assisted living facility, skilled nursing facility, etc.) may also include outdoor activity areas, at which this exterior noise level standard would apply. The potential locations of outdoor activity areas associated with these land uses was not known at the time of this analysis. However, a similarly constructed sound wall around such uses would reduce noise levels to below 65 dB  $L_{dn}$ . Such noise levels are allowed by the City.

**Interior Noise Exposure**

As described above, exterior project site noise exposure throughout the overall project area is approximately 65-70 dB  $L_{dn}$ , as a result of varying levels of proximity to both State Route 198 and the San Joaquin Valley Railroad line. Additionally, peak hour exterior noise levels would be approximately 70 dB  $L_{eq}$  at the exterior of the office land uses to the north and the nursing college to the south. Interior noise level standards applicable to the project site vary, based upon proposed land uses. These interior noise level standards applicable to the project are:

- 45 dB  $L_{dn}$ : Multi-family apartment, Hotel, skilled nursing facility, memory care facility, assisted living facility, and any additional facility where people are residing and sleep disturbance is considered.
- 45 dB  $L_{eq}$ : Office buildings, Nursing College (as determined for a typical worst case hour during periods of use)

Based upon the above-described exterior noise exposure levels and applicable interior noise level standards, the proposed construction measures must be capable of providing approximately 25 dB of outdoor-to-indoor noise level reduction (NLR) ( $70-45=25$ ).

Generally speaking, construction measures complying with current building code standards would typically be expected to provide approximately 20-25 dB of outdoor-to-indoor NLR, provided windows and doors can remain closed for sound insulation purposes. However, additional sound attenuation measures may be required in conditions where the exterior façade consists of large portions of window or storefront glazing assemblies. Once construction plans are developed, an acoustical consultant should review to determine if additional interior noise level mitigation measures may be required.

**Potential Impact:**

Interior noise level standards applicable to the project's proposed noise-sensitive land uses are described above. Exterior exposure levels at the exterior facades of proposed noise-sensitive land uses would be in the range of approximately 60-75 dB  $L_{dn}$  and 70 dB  $L_{eq}$  (peak hour). Depending

on final construction design, interior noise levels could potentially exceed the various applicable noise level standards of 45 dB  $L_{dn}$  and 45 dB  $L_{eq}$ .

**Mitigation Measures:**

Once building-specific construction plans become available, interior noise levels should be reviewed and calculated by a qualified acoustical consultant to determine if additional noise attenuation mitigation measures are required to comply with interior noise level standards.

**b. Noise Impacts from Nearby Airports or Airstrips (No Impact)**

The Project site is located approximately 1.5 miles west of Hanford Municipal Airport. WJVA has reviewed the Kings County Airport Land Use Compatibility Plan<sup>6</sup> to determine if the project would result in any noise compatibility concerns associated with airport operations. No portion of the project site is contained within any airport noise contours, and would therefore not result in any noise compatibility issues. The Hanford Municipal Airport noise contours are provided as Figure 6.

## 6. **IMPACT SUMMARY**

This impact summary addresses only the noise impacts determined to be “potentially significant” and summarizes the mitigation measures that would be required to reduce noise levels to a “less than significant” level or states that the impact may be significant and unavoidable. Potential impacts and correlating mitigation measures are described in detail above, and summarized below.

### **Potential Impact:**

Noise levels associated with truck movements could exceed the City’s 65 dB  $L_{max}$  nighttime noise level standard at the residential property lines north of the 5<sup>th</sup> Street access point, if truck deliveries were to occur between the nighttime hours of 10:00 p.m. to 7:00 a.m.

### **Mitigation Measures:**

Noise levels associated with nighttime (10:00 p.m. to 7:00 a.m.) truck movements could be mitigated by implementing the following condition:

- Require truck movements occurring during nighttime hours to use the Glendale Avenue access point only.

### **Potential Impact:**

A noise impact could occur if construction activities do not incorporate appropriate mitigation measures and best management practices.

### **Mitigation Measures:**

Noise levels associated with construction activities may be effectively mitigated by incorporating noise mitigation measures and appropriate best management practices. The following mitigation measures and best management practices should be applied during periods of project construction.

- Per the City of Hanford Municipal Code, construction activities should not occur outside the hours of 7:00 a.m. to 8:00 p.m.
- All construction equipment shall be properly maintained and muffled as to minimize noise generation at the source.
- Noise-producing equipment shall not be operating, running, or idling while not in immediate use by a construction contractor.



- All noise-producing construction equipment shall be located and operated, to the extent possible, at the greatest possible distance from any noise-sensitive land uses.
- Locate construction staging areas, to the extent possible, at the greatest possible distances from any noise-sensitive land uses.
- Signs shall be posted at the construction site and near adjacent sensitive receptors displaying hours of construction activities and providing the contact phone number of a designated noise disturbance coordinator.

#### **Potential Impact:**

Transportation noise exposure levels would be expected to exceed the City's 60 dB  $L_{dn}$  exterior noise level standard at outdoor activity areas associated with the multi-family apartment land use and the hotel land use. Additionally, depending on the locations (if included into final project design) of any outdoor activity areas associated with other noise-sensitive land uses (as defined above in Table 1), transportation noise exposure levels could exceed the City's exterior noise level standard at such land uses as well.

#### **Mitigation Measures:**

Based upon project site noise exposure (approximately 65-70 dB  $L_{dn}$ ) and the preliminary locations of the apartment and hotel pool areas (outdoor activity areas), mitigating exterior noise levels at these locations to at or below 60 dB  $L_{dn}$  would likely not be feasible. However, a preliminary analysis using a sound wall insertion loss model indicates that a sound wall constructed to a minimum height of six-and-a-half (6.5) feet above ground level constructed around the two pool areas (apartment and hotel land uses) would mitigate exterior noise levels to below 65 dB  $L_{dn}$  within these outdoor activity areas. Such noise levels are allowed by the City.

Other proposed sensitive receptors (memory care facility, assisted living facility, skilled nursing facility, etc.) may also include outdoor activity areas, at which the exterior noise level standard would apply. The potential locations of outdoor activity areas associated with these land uses was not known at the time of this analysis. However, a similarly constructed sound wall around such uses would reduce noise levels to below 65 dB  $L_{dn}$ .

#### **Potential Impact:**

Interior noise level standards applicable to the project's proposed noise-sensitive land uses are described above. Exterior exposure levels at the exterior facades of proposed noise-sensitive land uses would be in the range of approximately 60-75 dB  $L_{dn}$  and 70 dB  $L_{eq}$ . Depending on final construction design, interior noise levels could potentially exceed the various applicable noise level standards of 45 dB  $L_{dn}$  and 45 dB  $L_{eq}$ .

#### **Mitigation Measures:**

Based upon the above-described exterior noise exposure levels and applicable interior noise level standards, the proposed construction measures must be capable of providing approximately 25 dB of outdoor-to-indoor noise level reduction (NLR) ( $70-45=25$ ).

Generally speaking, construction measures complying with current building code standards would typically be expected to provide approximately 20-25 dB of outdoor-to-indoor NLR, provided windows and doors can remain closed for sound insulation purposes. However, additional sound attenuation measures may be required in conditions where the exterior façade consists of large portions of windows and/or storefront glazing assemblies. Once construction plans are developed, an acoustical consultant should review to determine if additional interior noise level mitigation measures may be required. Such measures would typically include the incorporation of sound-rated (higher STC) windows and assemblies.

## **7. SOURCES CONSULTED**

1. *City of Hanford 2035 General Plan*, April 2017
2. *City of Hanford Municipal Code*, 2016
3. California Department of Transportation, *Transportation and Construction Vibration Guidance Manual*, September 2013.
4. Federal Highway Administration, *Traffic Noise Model, Version 2.5*, April 14, 2004
5. Hodges & Shutt, *Kings County Airport Land Use Compatibility Plan*, July 1994

FIGURE 1: PROJECT SITE PLAN



FIGURE 3

LSA

NOT TO SCALE  
N

SOURCE: LANGDON WILSON INTERNATIONAL, 2020.

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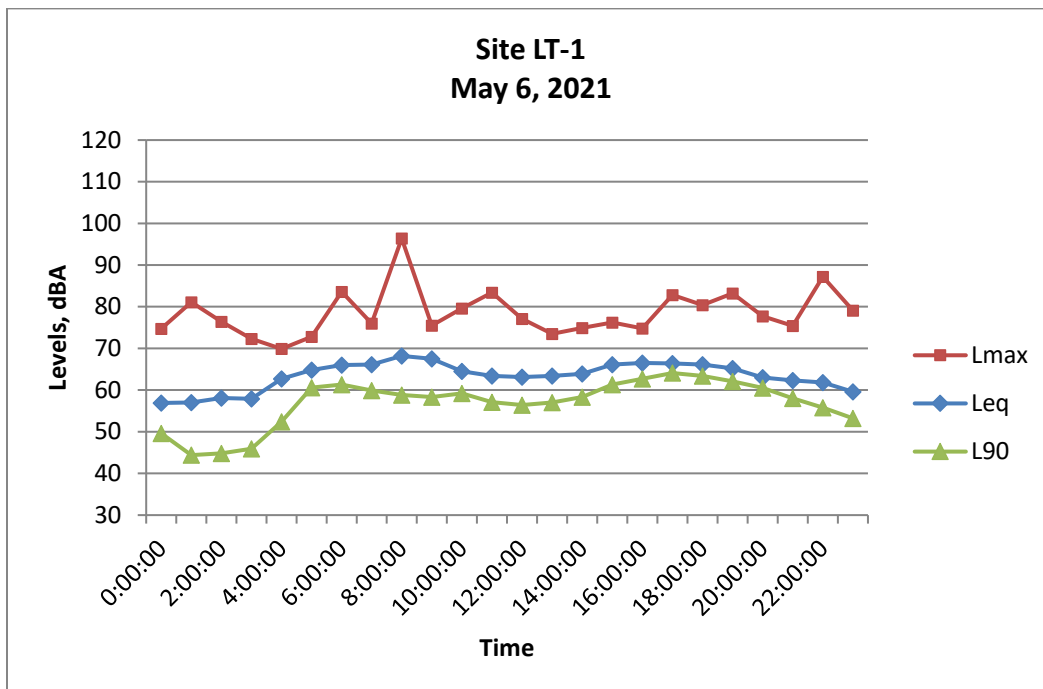
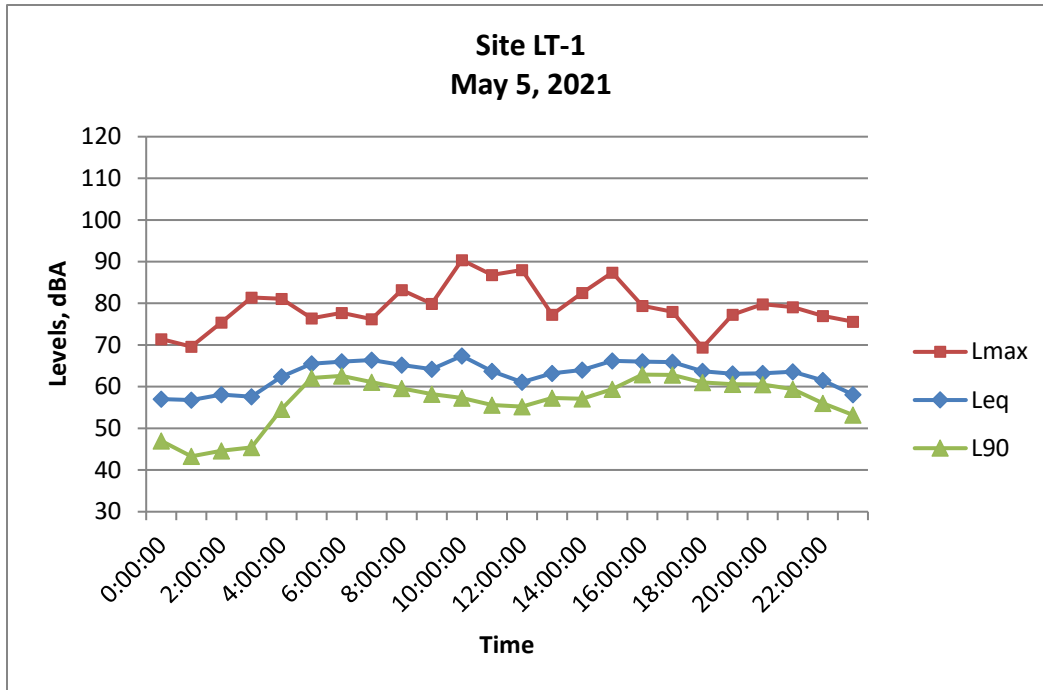
Hanford Place Project  
Hanford, Kings County, California  
Site Plan



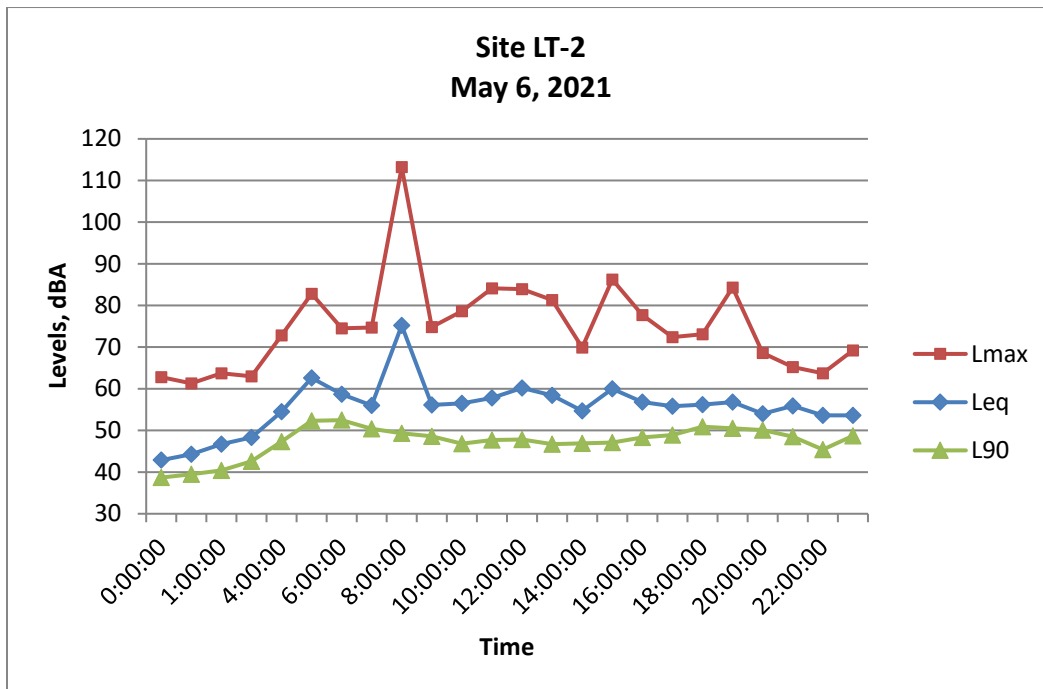
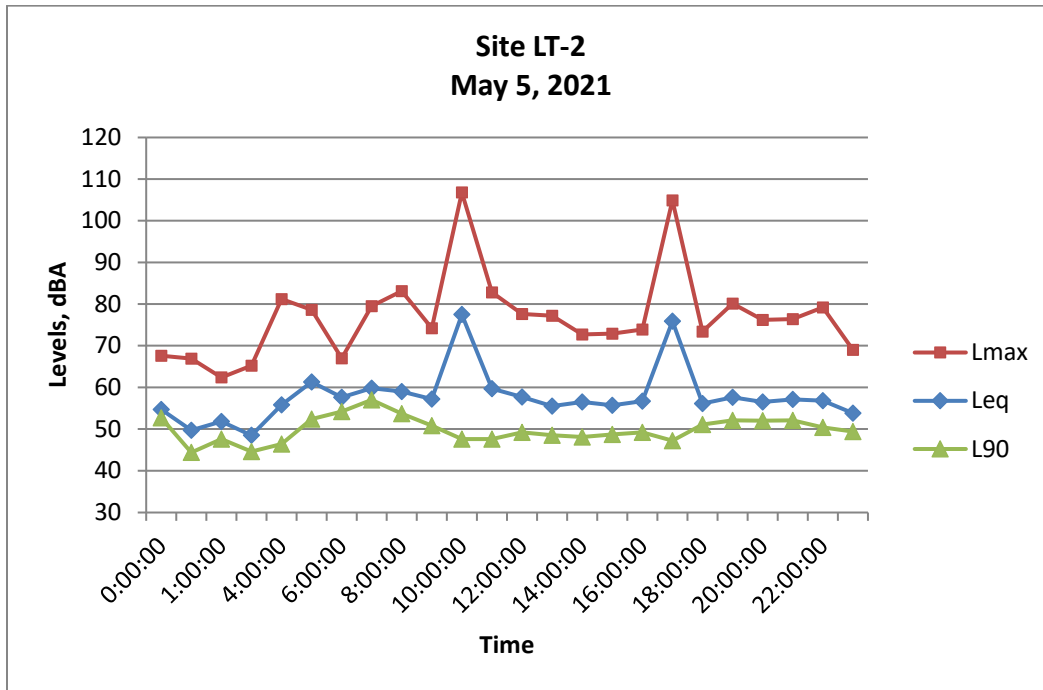
**FIGURE 2: PROJECT VICINITY AND AMBIENT NOISE MONITORING SITES**



**FIGURE 3: HOURLY NOISE LEVELS AT SITE LT-1**



**FIGURE 4: HOURLY NOISE LEVELS AT SITE LT-2**

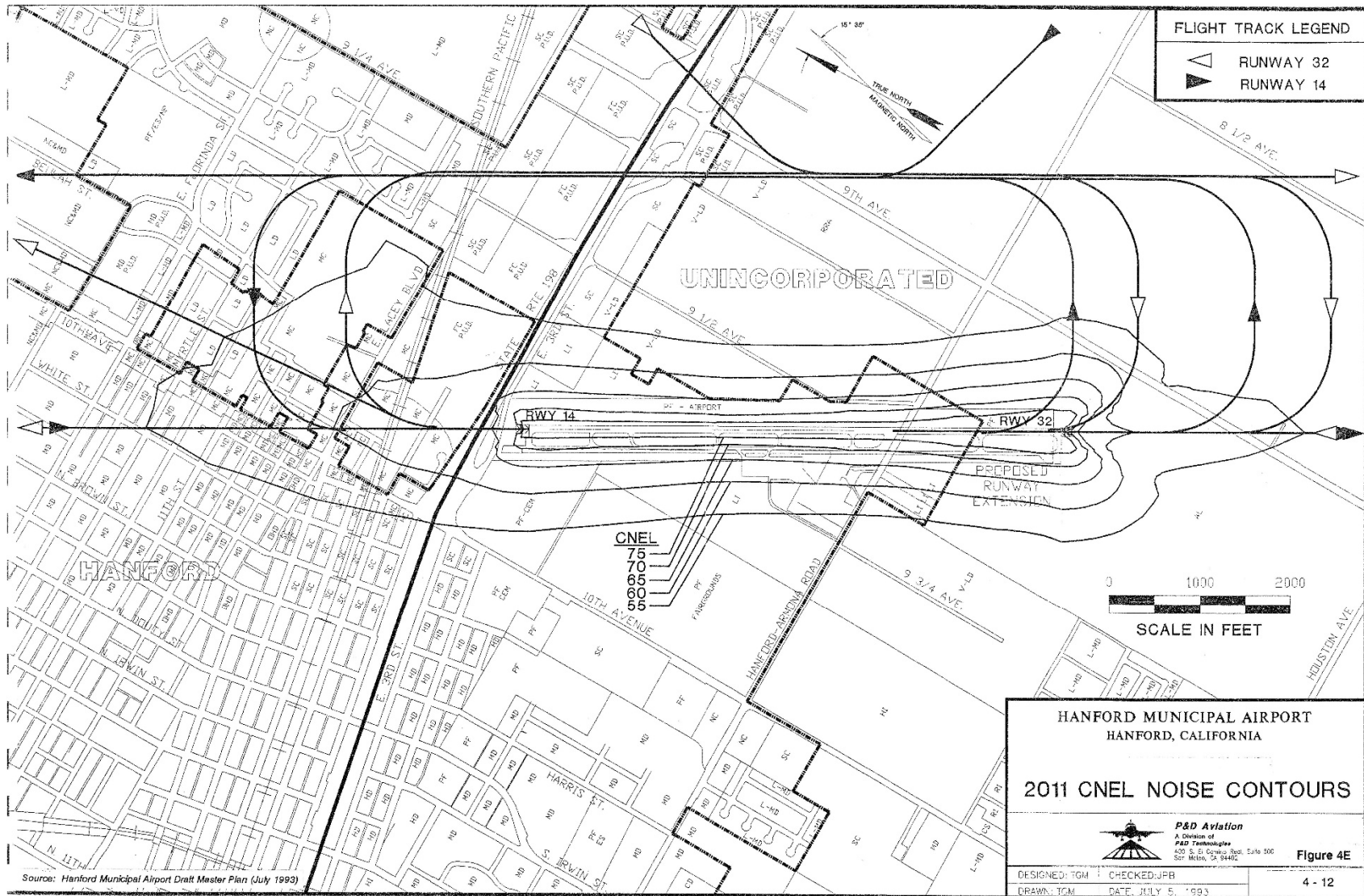




**FIGURE 5: MODELED TRAFFIC NOISE RECEPTOR LOCATIONS**



**FIGURE 6: HANFORD MUNICIPAL AIRPORT NOISE CONTOURS**



## APPENDIX A-1

### ACOUSTICAL TERMINOLOGY

|                             |                                                                                                                                                                                                                                                                                                   |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>AMBIENT NOISE LEVEL:</b> | The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.                                                                                                               |
| <b>CNEL:</b>                | Community Noise Equivalent Level. The average equivalent sound level during a 24-hour day, obtained after addition of approximately five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and ten decibels to sound levels in the night before 7:00 a.m. and after 10:00 p.m. |
| <b>DECIBEL, dB:</b>         | A unit for describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).                                                           |
| <b>DNL/L<sub>dn</sub>:</b>  | Day/Night Average Sound Level. The average equivalent sound level during a 24-hour day, obtained after addition of ten decibels to sound levels in the night after 10:00 p.m. and before 7:00 a.m.                                                                                                |
| <b>L<sub>eq</sub>:</b>      | Equivalent Sound Level. The sound level containing the same total energy as a time varying signal over a given sample period. L <sub>eq</sub> is typically computed over 1, 8 and 24-hour sample periods.                                                                                         |
| <b>NOTE:</b>                | The CNEL and DNL represent daily levels of noise exposure averaged on an annual basis, while L <sub>eq</sub> represents the average noise exposure for a shorter time period, typically one hour.                                                                                                 |
| <b>L<sub>max</sub>:</b>     | The maximum noise level recorded during a noise event.                                                                                                                                                                                                                                            |
| <b>L<sub>n</sub>:</b>       | The sound level exceeded "n" percent of the time during a sample interval (L <sub>90</sub> , L <sub>50</sub> , L <sub>10</sub> , etc.). For example, L <sub>10</sub> equals the level exceeded 10 percent of the time.                                                                            |



## A-2

### ACOUSTICAL TERMINOLOGY

#### **NOISE EXPOSURE CONTOURS:**

Lines drawn about a noise source indicating constant levels of noise exposure. CNEL and DNL contours are frequently utilized to describe community exposure to noise.

#### **NOISE LEVEL REDUCTION (NLR):**

The noise reduction between indoor and outdoor environments or between two rooms that is the numerical difference, in decibels, of the average sound pressure levels in those areas or rooms. A measurement of “noise level reduction” combines the effect of the transmission loss performance of the structure plus the effect of acoustic absorption present in the receiving room.

#### **SEL or SENEL:**

Sound Exposure Level or Single Event Noise Exposure Level. The level of noise accumulated during a single noise event, such as an aircraft overflight, with reference to a duration of one second. More specifically, it is the time-integrated A-weighted squared sound pressure for a stated time interval or event, based on a reference pressure of 20 micropascals and a reference duration of one second.

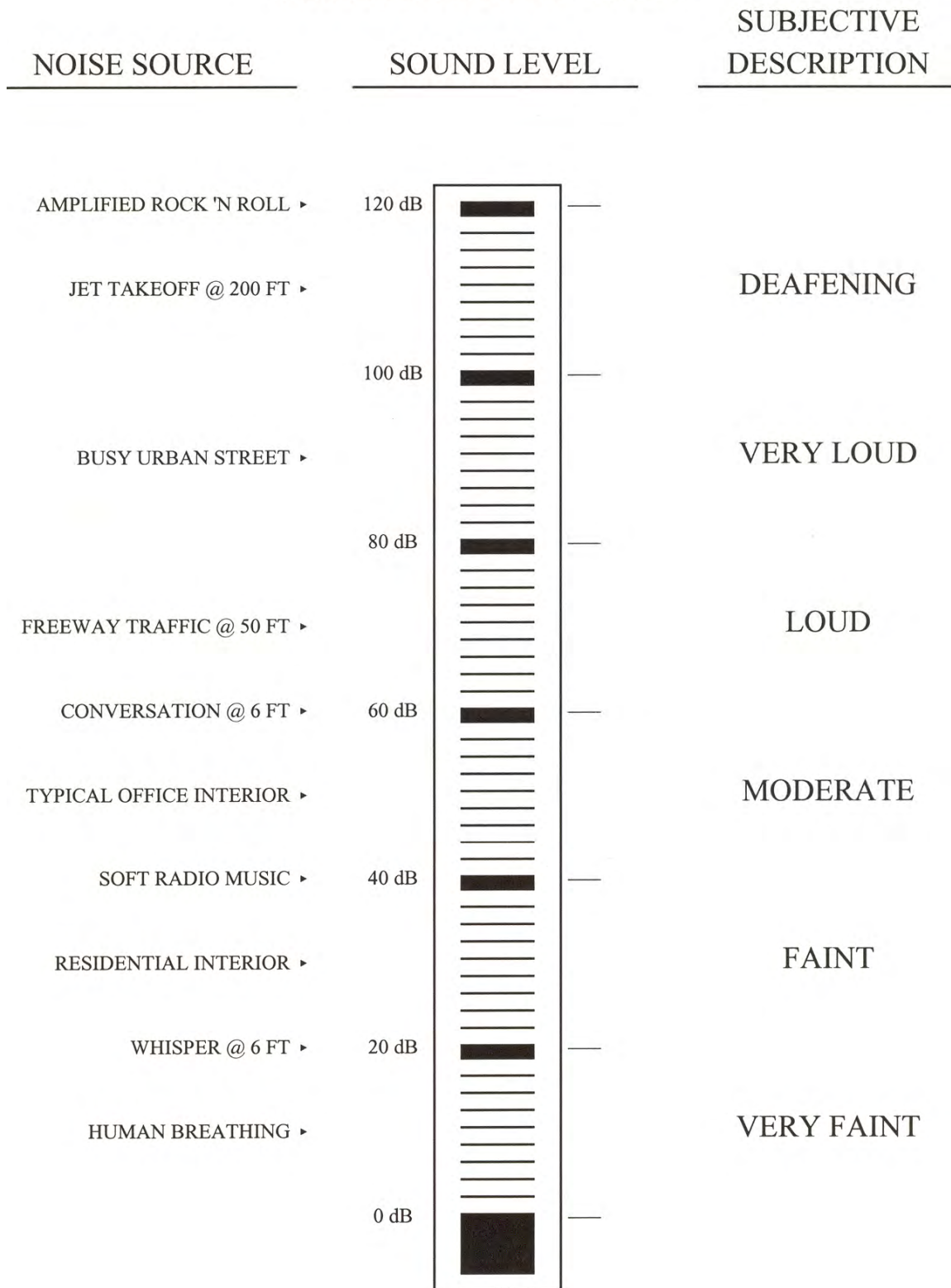
#### **SOUND LEVEL:**

The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear and gives good correlation with subjective reactions to noise.

#### **SOUND TRANSMISSION CLASS (STC):**

The single-number rating of sound transmission loss for a construction element (window, door, etc.) over a frequency range where speech intelligibility largely occurs.

# APPENDIX B EXAMPLES OF SOUND LEVELS



**APPENDIX C**

**TRAFFIC NOISE MODELING CALCULATIONS**

**WJV Acoustics, Inc**  
**FHWA-RD-77-108**  
**Calculation Sheets**  
 May 7, 2021

|              |          |
|--------------|----------|
| Project #:   | 20-016   |
| Description: | Existing |
| Ldn/Cnel:    | Ldn      |
| Site Type:   | Soft     |

|                            |    |    |    |    |  |  |  |  |  |
|----------------------------|----|----|----|----|--|--|--|--|--|
| <b>Contour Levels (dB)</b> | 60 | 65 | 70 | 75 |  |  |  |  |  |
|----------------------------|----|----|----|----|--|--|--|--|--|

[illegible]



|              |                    |
|--------------|--------------------|
| Project #:   | 20-016             |
| Description: | Existing + project |
| Ldn/Cnel:    | Ldn                |
| Site Type:   | Soft               |

[illegible]

**WJV Acoustics, Inc**  
**FHWA-RD-77-108**  
**Calculation Sheets**  
 May 7, 2021

|              |                 |
|--------------|-----------------|
| Project #:   | 20-016          |
| Description: | 2042 No Pojrect |
| Ldn/Cnel:    | Ldn             |
| Site Type:   | Soft            |

|                            |    |    |    |    |  |  |  |  |  |
|----------------------------|----|----|----|----|--|--|--|--|--|
| <b>Contour Levels (dB)</b> | 60 | 65 | 70 | 75 |  |  |  |  |  |
|----------------------------|----|----|----|----|--|--|--|--|--|

[illegible]

|              |                |
|--------------|----------------|
| Project #:   | 20-016         |
| Description: | 2042 + Pojrect |
| Ldn/Cnel:    | Ldn            |
| Site Type:   | Soft           |

[illegible]

---

## APPENDIX F

### TRAFFIC IMPACT STUDY

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# DRAFT

## Hanford Place Development

Traffic Impact Study  
December 2020

**Prepared by:**

VRPA Technologies, Inc.  
4630 W. Jennifer, Suite 105  
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## Hanford Place Development Traffic Impact Study

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## Executive Summary

This Traffic Impact Study (TIS) has been prepared for the purpose of analyzing traffic conditions related to the Hanford Place Development (Project). The various components of the Project are detailed in Table E-1 below. The Project site is generally bound to the north by the San Joaquin Valley Railroad, to the east by commercial land uses, to the south by State Route 198, and to the west by commercial land uses. Regional access to the site is provided by State Route 198, which is located adjacent to the southern border of the project site.

The vacant project site is comprised of four parcels and is located between State Route 198 and the San Joaquin Valley Railroad in the City of Hanford (City), in Kings County (Kings). 5th Street cuts through the project site in an east/west direction and Campus Drive cuts through the project in a north/south direction. In addition, the Peoples Ditch runs through the project site.

The city of Hanford is located 30 miles south of the City of Fresno and 20 miles west of the City of Visalia. Hanford was incorporated in 1891 and is the county seat of Kings County. Hanford is located in the northern portion of Kings County at an elevation of 249 feet above sea level. The city has a total area of 16.6 square miles, all of which is land not covered by water. The only natural watercourse is Mussel Slough, remnants of which still exist on the city's western edge. The People's Ditch, an irrigation canal dug in the 1870s, traverses Hanford from north to south.

Vehicular access to the site would be provided by Glendale Avenue, 5th Street, and Campus Drive. The extension of these roadways would be constructed to City standards and would be dedicated as public right of way. The proposed project would also construct a roundabout, which would also be dedicated as public right of way and would be constructed to Caltrans or City-approved standards. As part of the project, Glendale Avenue would be realigned at the northwest corner of the Hanford Veterinary Hospital development. The existing knuckle would be removed, and Glendale Avenue would be realigned using speed-specific design curves. Any new portions of Glendale Avenue would be dedicated as public right of way and any portion of existing right of way not used would be abandoned. 5th Street would be extended starting at the existing alignment before realigning to the roundabout. In addition, the proposed project would provide 1,466 parking spaces throughout the project site.

The TIS completed for the Project includes level of service (LOS) analysis for the following traffic scenarios.

- ✓ Existing Conditions
- ✓ Existing Plus Project
- ✓ Near-Term Plus Project
- ✓ Cumulative Year 2042 Without Project
- ✓ Cumulative Year 2042 Plus Project

**Table E-1**  
**Project Components**

| PROJECT COMPONENTS          | SIZE/UNIT  | DESCRIPTION                                                                                                                                                                                                                                                                            |
|-----------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ambulatory Surgery Center   | 22,525 sf  | This facility is used to handle approximately 25 surgical procedures per day. There will be approximately 12 employees. This only operates weekdays.                                                                                                                                   |
| Specialty Clinic            | 12,445 sf  | This will be an Office of Statewide Health Planning and Development's (OSHDP) 3 facility, which in turn will approve advanced scope for medical care (i.e.: radiology/oncology. This will be a Monday-Saturday facility.                                                               |
| Medical Office Building     | 24,890 sf  | This will be standard weekday medical offices.                                                                                                                                                                                                                                         |
| Psychiatric Health Facility | 12,445 sf  | This is a psychiatric health care facility. This will consist of 24 patients who stay an average of 5 days. There will be approximately 10 employees and this use will operate 24/7. There will be approximately 4 admissions/discharges per day all done via ambulance.               |
| Hotel & Conference Center   | 105 Rooms  | This will be a standard traffic count for hotels and will be a limited service hotel. The conference center will be used on an average of 2 times per week including weekends.                                                                                                         |
| Nursing College             | 35,000 sf  | This is a m-sat operation. The School hosts 4 classes per scheduling window and offer three scheduling windows per day. Average class length is 2.5 hours. Average student enrollment is 8 students per class. Total classes of 12 per day and start at 8am and finish at 930pm.       |
| Skilled Nursing Facility    | 54,611 sf  | Skilled nursing facility with average of 1.5 admits per day and 1 discharge per day. Staff ratio of 1:6 with a total of 59 beds. It is a 24/7 operation and there are usually approximately 20 visitors/service provider visits per day. No patients/residents have access to vehicles |
| Memory Care                 | 34,480 sf  | Like above SNF, however longer length of stay (average stay of 45 days) so less vehicle traffic inbound and outbound. Same staff ratio and same visit count by visitors/service providers.                                                                                             |
| Assisted Living Facility    | 34,380 sf  | Limited use of vehicles for residents. On average ¼ of residents have vehicles parked full time at facility. Majority of residents use facilities bus transportation. This is 24/7 as well and staff ratio is 1:8.                                                                     |
| Multi-Family Apartment      | 90 Units   | Standard                                                                                                                                                                                                                                                                               |
| Medical/Commercial          | 114,000 sf | This will be standard weekday medical offices.                                                                                                                                                                                                                                         |

## IMPACTS

### Intersections

Table E-2 provides the intersection level of service analysis for the study intersections considering the study scenarios discussed above. Potential mitigation measures are discussed below. Results of the analysis show that the Project will contribute to an unacceptable LOS at five (5) of the study intersections when comparing the Cumulative Year 2042 scenarios.

### Segments

Table E-3 shows roadway segments that are expected to fall short of desirable operating conditions for various scenarios. Potential mitigation measures are discussed below. Results of the analysis also show that the Project will result in a cumulative impact at two (2) of the study roadway segments when comparing the Cumulative Year 2042 scenarios.

**Table E-2**  
**Intersection Operations**

| INTERSECTION                                    | CONTROL           | TARGET LOS      | PEAK HOUR | EXISTING     |     | EXISTING PLUS PROJECT |     | NEAR-TERM PLUS PROJECT |     | CUMULATIVE YEAR 2042 WITHOUT PROJECT |     | CUMULATIVE YEAR 2042 PLUS PROJECT |     |
|-------------------------------------------------|-------------------|-----------------|-----------|--------------|-----|-----------------------|-----|------------------------|-----|--------------------------------------|-----|-----------------------------------|-----|
|                                                 |                   |                 |           | DELAY        | LOS | DELAY                 | LOS | DELAY                  | LOS | DELAY                                | LOS | DELAY                             | LOS |
| 1. 12th Avenue / Glendale Avenue                | Two-Way Stop Sign | D               | AM        | 22.7         | C   | 30.2                  | D   | <b>37.2</b>            | E   | <b>74.4</b>                          | F   | <b>154.4</b>                      | F+  |
|                                                 |                   |                 | PM        | <b>100.4</b> | F+  | <b>184.6</b>          | F+  | <b>269.9</b>           | F+  | ++                                   | F   | ++                                | F+  |
| 2. 12th Avenue / SR 198 WB Ramps                | Signalized        | -- <sup>1</sup> | AM        | 13.8         | B   | 13.7                  | B   | 14.5                   | B   | 18.8                                 | B   | 19.9                              | B   |
|                                                 |                   |                 | PM        | 17.8         | B   | 19.4                  | B   | 23.0                   | C   | 64.5                                 | E   | 75.1                              | E   |
| 3. 12th Avenue / SR 198 EB Ramps                | Signalized        | -- <sup>1</sup> | AM        | 11.9         | B   | 12.5                  | B   | 12.7                   | B   | 13.2                                 | B   | 13.7                              | B   |
|                                                 |                   |                 | PM        | 13.0         | B   | 13.6                  | B   | 14.3                   | B   | 19.0                                 | B   | 20.1                              | C   |
| 4. Campus Drive / Lacey Boulevard               | Signalized        | D               | AM        | 25.0         | C   | 25.2                  | C   | 25.4                   | C   | 25.7                                 | C   | 25.5                              | C   |
|                                                 |                   |                 | PM        | 28.0         | C   | 29.2                  | C   | 31.4                   | C   | 52.2                                 | D   | 52.9                              | D   |
| 5. Campus Drive / 7th Street                    | All-Way Stop Sign | D               | AM        | 9.9          | A   | 11.9                  | B   | 12.6                   | B   | 12.1                                 | B   | 15.0                              | B   |
|                                                 |                   |                 | PM        | 15.6         | C   | 23.7                  | C   | 31.8                   | D   | <b>92.9</b>                          | F   | <b>146.9</b>                      | F   |
| 6. Campus Drive / 6th Street                    | Two-Way Stop Sign | D               | AM        | 10.4         | B   | 13.3                  | B   | 13.6                   | B   | 10.7                                 | B   | 13.1                              | B   |
|                                                 |                   |                 | PM        | 10.6         | B   | 13.9                  | B   | 14.3                   | B   | 11.5                                 | B   | 14.7                              | B   |
| 7. 11th Avenue / Lacey Boulevard                | Signalized        | D               | AM        | 20.4         | C   | 20.3                  | C   | 21.0                   | C   | 25.3                                 | C   | 25.9                              | C   |
|                                                 |                   |                 | PM        | 27.5         | C   | 28.5                  | C   | 31.6                   | C   | 49.9                                 | D   | 52.7                              | D   |
| 8. 11th Avenue / 7th Street                     | Signalized        | D               | AM        | 18.9         | C   | 18.9                  | B   | 19.7                   | B   | 24.2                                 | C   | 24.4                              | C   |
|                                                 |                   |                 | PM        | 28.8         | C   | 29.0                  | C   | 31.8                   | C   | <b>55.6</b>                          | E   | <b>57.6</b>                       | E   |
| 9. 11th Avenue / 6th Street                     | Two-Way Stop Sign | D               | AM        | 12.6         | B   | 12.7                  | B   | 13.3                   | B   | 17.1                                 | C   | 17.3                              | C   |
|                                                 |                   |                 | PM        | 17.4         | C   | 18.1                  | C   | 20.6                   | C   | <b>74.3</b>                          | F   | <b>83.6</b>                       | F   |
| 10. 11th Avenue / 5th Street                    | Signalized        | D               | AM        | 4.9          | A   | 9.6                   | A   | 9.7                    | A   | 6.5                                  | A   | 10.7                              | B   |
|                                                 |                   |                 | PM        | 12.1         | B   | 18.1                  | B   | 19.5                   | B   | 23.8                                 | C   | 42.3                              | D   |
| 11. 11th Avenue / 4th Street-SR 198 WB On Ramp  | Signalized        | -- <sup>1</sup> | AM        | 12.0         | B   | 15.3                  | B   | 15.9                   | B   | 16.4                                 | B   | 20.8                              | C   |
|                                                 |                   |                 | PM        | 12.7         | B   | 14.6                  | B   | 15.6                   | B   | 21.0                                 | C   | 28.4                              | C   |
| 12. 11th Avenue / 3rd Street-SR 198 EB Off Ramp | Signalized        | -- <sup>1</sup> | AM        | 18.6         | B   | 21.0                  | C   | 22.9                   | C   | 27.0                                 | C   | 30.2                              | C   |
|                                                 |                   |                 | PM        | 25.1         | C   | 30.6                  | C   | 35.4                   | D   | 76.3                                 | E   | 97.4                              | F   |

DELAY is measured in seconds

LOS = Level of Service / **BOLD** denotes LOS standard has been exceeded

For signalized and all-way stop intersections, delay results show the average for the entire intersection. For one-way and two-way stop controlled intersections, delay results show the delay for the worst movement.

1 - With the changes brought about by SB 743, Caltrans no longer uses level of service to determine the need for transportation improvements. Instead, focus is on providing adequate facilities for pedestrians, bicycles, and transit as well as safety considerations for all transportation modes. Guidance is provided in the Transportation Impact Study Guide dated May 20, 2020 and the Interim Land Development and Intergovernmental Review Safety Review Practitioners Guidance dated July 2020. This guidance will be used in determining the need for roadway improvements on Caltrans facilities.

+ Meets peak hour signal warrants.

++ Delay Exceeds 300 seconds.

**Table E-3**  
**Segment Operations**

| STREET SEGMENT                      | SEGMENT DESCRIPTION | TARGET LOS | PEAK HOUR | EXISTING |     | EXISTING PLUS PROJECT |     | NEAR-TERM PLUS PROJECT |     | CUMULATIVE YEAR 2042 WITHOUT PROJECT |     | CUMULATIVE YEAR 2042 PLUS PROJECT |     |
|-------------------------------------|---------------------|------------|-----------|----------|-----|-----------------------|-----|------------------------|-----|--------------------------------------|-----|-----------------------------------|-----|
|                                     |                     |            |           | VOLUME   | LOS | VOLUME                | LOS | VOLUME                 | LOS | VOLUME                               | LOS | VOLUME                            | LOS |
| Lacey Boulevard                     |                     |            |           |          |     |                       |     |                        |     |                                      |     |                                   |     |
| 12th Avenue to Campus Drive         | 4 Lanes Divided     | D          | AM        | 855      | C   | 919                   | C   | 990                    | C   | 1,322                                | C   | 1,386                             | C   |
|                                     |                     |            | PM        | 1,693    | C   | 1,767                 | C   | 1,907                  | C   | 2,617                                | D   | 2,691                             | D   |
| Campus Drive to 11th Avenue         | 4 Lanes Divided     | D          | AM        | 963      | C   | 1,027                 | C   | 1,107                  | C   | 1,489                                | C   | 1,553                             | C   |
|                                     |                     |            | PM        | 1,873    | C   | 1,947                 | C   | 2,101                  | C   | 2,896                                | D   | 2,970                             | E   |
| 7th Street                          |                     |            |           |          |     |                       |     |                        |     |                                      |     |                                   |     |
| Campus Drive to 11th Avenue         | 2 Lanes Undivided   | D          | AM        | 346      | D   | 378                   | D   | 407                    | D   | 535                                  | D   | 567                               | D   |
|                                     |                     |            | PM        | 743      | D   | 780                   | D   | 841                    | D   | 1,149                                | E   | 1,186                             | E   |
| 6th Street                          |                     |            |           |          |     |                       |     |                        |     |                                      |     |                                   |     |
| Campus Drive to 11th Avenue         | 2 Lanes Undivided   | D          | AM        | 127      | C   | 127                   | C   | 137                    | C   | 196                                  | C   | 196                               | C   |
|                                     |                     |            | PM        | 142      | C   | 142                   | C   | 154                    | C   | 220                                  | C   | 220                               | C   |
| Glendale Avenue                     |                     |            |           |          |     |                       |     |                        |     |                                      |     |                                   |     |
| East of 12th Avenue                 | 2 Lanes Undivided   | D          | AM        | 130      | C   | 323                   | C   | 334                    | D   | 201                                  | C   | 394                               | D   |
|                                     |                     |            | PM        | 163      | C   | 385                   | D   | 399                    | D   | 252                                  | C   | 474                               | D   |
| 5th Avenue                          |                     |            |           |          |     |                       |     |                        |     |                                      |     |                                   |     |
| West of 11th Avenue                 | 2 Lanes Undivided   | D          | AM        | 101      | C   | 359                   | D   | 367                    | D   | 156                                  | C   | 414                               | D   |
|                                     |                     |            | PM        | 464      | D   | 760                   | D   | 799                    | D   | 717                                  | D   | 1,014                             | D   |
| Campus Drive                        |                     |            |           |          |     |                       |     |                        |     |                                      |     |                                   |     |
| Lacey Bouloevard to Glendale Avenue | 2 Lanes Undivided   | D          | AM        | 251      | C   | 380                   | D   | 400                    | D   | 388                                  | D   | 517                               | D   |
|                                     |                     |            | PM        | 393      | D   | 541                   | D   | 574                    | D   | 608                                  | D   | 756                               | D   |

LOS = Level of Service / **BOLD** denotes LOS standard has been exceeded



## MITIGATION

As discussed above, the potentially significant impacts resulting from the Project relate to the generation of unacceptable LOS at various intersections and road segments in the long term. Considering the criteria provided in Section 1.3 and the results presented above, the following improvements are recommended to alleviate project-specific impacts.

## INTERSECTIONS

- ✓ 12<sup>th</sup> Avenue at Glendale Avenue  
*No Recommended improvements.*

Installation of a traffic signal would alleviate level of service deficiencies at the intersection for all study scenarios. However, providing a traffic signal at this location is not practical given the close spacing of adjacent intersections. In lieu of the traffic signal, dual right turn lanes for the eastbound and westbound approaches to the intersection should be considered to alleviate queuing at the eastbound and westbound approaches.

- ✓ Campus Drive at 7<sup>th</sup> Street  
*Recommended improvements to achieve acceptable levels of service:*
  - Cumulative Year 2042 Plus Project scenario:
    - Install Traffic Signal

The improvements identified above for the Cumulative Year 2042 Plus Project scenario are sufficient to meet the City of Hanford's acceptable LOS standard of 'D'.

- ✓ 11<sup>th</sup> Avenue at 7<sup>th</sup> Street  
*No Recommended improvements.*

Providing additional turning movement lanes along 11<sup>th</sup> Avenue and 7<sup>th</sup> Street is not possible due to design constraints or infeasible/impractical due to the presence of commercial development that currently exists along the north and south side of 7<sup>th</sup> Street.

- ✓ 11<sup>th</sup> Avenue at 6<sup>th</sup> Street  
*No Recommended improvements.*

This intersection is forecasted to operate at unacceptable LOS 'F' (PM) under Cumulative Year 2042 Without Project and Cumulative Year 2042 Plus Project conditions; however, this intersection does not meet the peak hour traffic signal warrant because the minor approaches do not carry enough traffic to justify signalization. Therefore, no improvements are recommended for the Project's contribution of traffic at the intersection for the Cumulative Year 2042 Plus Project condition.

- ✓ 12<sup>th</sup> Avenue at SR 198 WB Ramps  
*No Recommended improvements.*

Providing additional turning movement lanes at the 12<sup>th</sup> Avenue and SR 198 WB Ramps intersection is not possible due to design constraints or infeasible/impractical due to the presence of development that currently exists along the north side of the SR 198 WB Ramps. As noted in Section 1.3, Caltrans no longer uses level of service to determine the need for transportation improvements. Instead, focus is on providing adequate facilities for pedestrians, bicycles, and transit as well as safety considerations for all transportation modes.

✓ 11<sup>th</sup> Avenue at 3<sup>rd</sup> Street-SR 198 EB Off Ramp

*No Recommended improvements.*

Providing additional turning movement lanes at the 11<sup>th</sup> Avenue and 3<sup>rd</sup> Street-SR 198 EB Off Ramp intersection is not possible due to design constraints or infeasible/impractical due to the presence of development that currently exists along the south side of 3<sup>rd</sup> Street and the SR 198 EB Off Ramp. As noted in Section 1.3, Caltrans no longer uses level of service to determine the need for transportation improvements. Instead, focus is on providing adequate facilities for pedestrians, bicycles, and transit as well as safety considerations for all transportation modes.

## ROADWAY SEGMENTS

✓ Lacey Boulevard between Campus Drive and 11<sup>th</sup> Avenue

*No Recommended improvements.*

Providing additional travel lanes along Lacey Boulevard is not possible due to design constraints or infeasible/impractical due to the presence of retail development that currently exists along the north and south side of Lacey Boulevard. In addition, accommodating additional travel lanes along Lacey Boulevard could result in the elimination of parking along Lacey Boulevard.

✓ 7<sup>th</sup> Street between Campus Drive and 11<sup>th</sup> Avenue

*Recommended improvements:*

- Cumulative Year 2042 Plus Project scenario:
  - Restripe to provide two-way left turn lane with removal of parking as necessary

Providing additional travel lanes along 7<sup>th</sup> Street is not possible due to right-of-way constraints.

## *Post-Mitigation Level of Significance*

The level of service resulting from the potential improvements identified above is shown in Tables E-4 and E-5.

This section documents the Project's fair-share responsibility towards the costs of improvements that are identified for the Cumulative Year 2042 scenario. The City of Hanford and the applicant have determined that the payment of the City's impact fees will satisfy the Project's obligations to pay for an equitable share of the improvements.

The formulas used to calculate the equitable share responsibility to City of Hanford facilities is as follows:

$$\text{Equitable Share} = (\text{Project Trips}) / (\text{Future Year Plus Project Traffic})$$

Table E-6 shows the Project's equitable fair share responsibility on a percentage basis for improvements to City of Hanford facilities as described above. The equitable fair share responsibility shown in Table E-6 is the result of LOS enhancements related to capacity.

**Table E-4**  
**Intersection Operations with Mitigation**

| INTERSECTION                                    | CONTROL           | TARGET LOS      | PEAK HOUR | EXISTING PLUS PROJECT |                      | NEAR-TERM PLUS PROJECT |                      | CUMULATIVE YEAR 2042 PLUS PROJECT |                      |
|-------------------------------------------------|-------------------|-----------------|-----------|-----------------------|----------------------|------------------------|----------------------|-----------------------------------|----------------------|
|                                                 |                   |                 |           | DELAY                 | LOS                  | DELAY                  | LOS                  | DELAY                             | LOS                  |
| 1. 12th Avenue / Glendale Avenue                | Two-Way Stop Sign | D               | AM        | 30.2                  | D                    | <b>37.2</b>            | <b>E<sup>2</sup></b> | <b>154.4</b>                      | <b>F<sup>2</sup></b> |
|                                                 |                   |                 | PM        | <b>184.6</b>          | <b>F<sup>2</sup></b> | <b>269.9</b>           | <b>F<sup>2</sup></b> | <b>++</b>                         | <b>F<sup>2</sup></b> |
| 2. 12th Avenue / SR 198 WB Ramps                | Signalized        | -- <sup>1</sup> | AM        |                       |                      |                        |                      | 19.9                              | B                    |
|                                                 |                   |                 | PM        |                       |                      |                        |                      | 75.1                              | <b>E<sup>3</sup></b> |
| 5. Campus Drive / 7th Street                    | Signalized        | D               | AM        |                       |                      |                        |                      | 12.8                              | B                    |
|                                                 |                   |                 | PM        |                       |                      |                        |                      | 20.4                              | C                    |
| 8. 11th Avenue / 7th Street                     | Signalized        | D               | AM        |                       |                      |                        |                      | 24.4                              | C                    |
|                                                 |                   |                 | PM        |                       |                      |                        |                      | <b>57.6</b>                       | <b>E<sup>3</sup></b> |
| 9. 11th Avenue / 6th Street                     | Two-Way Stop Sign | D               | AM        |                       |                      |                        |                      | 17.3                              | C                    |
|                                                 |                   |                 | PM        |                       |                      |                        |                      | <b>83.6</b>                       | <b>F<sup>4</sup></b> |
| 12. 11th Avenue / 3rd Street-SR 198 EB Off Ramp | Signalized        | -- <sup>1</sup> | AM        |                       |                      |                        |                      | 30.2                              | C                    |
|                                                 |                   |                 | PM        |                       |                      |                        |                      | 97.4                              | <b>F<sup>3</sup></b> |

DELAY is measured in seconds

LOS = Level of Service / **BOLD** denotes LOS standard has been exceeded

For signalized and all-way stop intersections, delay results show the average for the entire intersection. For one-way and two-way stop controlled intersections, delay results show the delay for the worst movement.

1 - With the changes brought about by SB 743, Caltrans no longer uses level of service to determine the need for transportation improvements. Instead, focus is on providing adequate facilities for pedestrians, bicycles, and transit as well as safety considerations for all transportation modes. Guidance is provided in the Transportation Impact Study Guide dated May 20, 2020 and the Interim Land Development and Intergovernmental Review Safety Review Practitioners Guidance dated July 2020. This guidance will be used in determining the need for roadway improvements on Caltrans facilities. **The recommended improvements are for informational purposes only and would allow for the intersection to meet the City of Hanford LOS criteria.**

2 Installation of a traffic signal would alleviate LOS deficiencies at the intersection. A traffic signal is not recommended given the close spacing of adjacent intersections.

3 Improvements to the intersection aren't recommended given the presence of abutting commercial development at the intersection.

4 Intersection does not meet the peak hour traffic signal warrant.

++ Delay Exceeds 300 seconds.

**Table E-5**

**Table E-5**  
**Segment Operations with Mitigation**

| STREET SEGMENT              | TARGET LOS | PEAK HOUR | CUMULATIVE<br>YEAR 2042<br>PLUS PROJECT |     |
|-----------------------------|------------|-----------|-----------------------------------------|-----|
|                             |            |           | VOLUME                                  | LOS |
| Lacey Boulevard             |            |           |                                         |     |
| Campus Drive to 11th Avenue | D          | AM        | 1,553                                   | C   |
|                             |            | PM        | 2,970                                   | E * |
| 7th Street                  |            |           |                                         |     |
| Campus Drive to 11th Avenue | D          | AM        | 567                                     | D   |
|                             |            | PM        | 1,186                                   | E * |

\* Capacity Increasing Improvements to the roadway segment aren't recommended given the presence of abutting commercial development.

**Table E-6**  
**Cumulative Year 2042 Equitable Share Responsibility**

| INTERSECTION                                    | PEAK HOUR | PROJECT TRIPS | CUMULATIVE YEAR 2042 PLUS PROJECT | FAIR SHARE PERCENTAGE |
|-------------------------------------------------|-----------|---------------|-----------------------------------|-----------------------|
| Campus Drive / 7th Street                       | AM        | 193           | 1,098                             | 17.6%                 |
|                                                 | PM        | 223           | 1,830                             | 12.2%                 |
| <b>ROADWAY SEGMENT</b>                          |           |               |                                   |                       |
| 7th Street between Campus Drive and 11th Avenue | AM        | 32            | 567                               | 5.6%                  |
|                                                 | PM        | 37            | 1,186                             | 3.1%                  |

## 1.0 Introduction

### 1.1 Description of the Region/Project

This Traffic Impact Study (TIS) has been prepared for the purpose of analyzing traffic conditions related to the Hanford Place Development (Project). The various components of the Project are detailed in Table 1-1 below. The Project site is generally bound to the north by the San Joaquin Valley Railroad, to the east by commercial land uses, to the south by State Route 198, and to the west by commercial land uses. Regional access to the site is provided by State Route 198, which is located adjacent to the southern border of the project site. Figure 1-1 shows the site's regional context. Figure 1-2 shows the Project location within the City of Hanford.

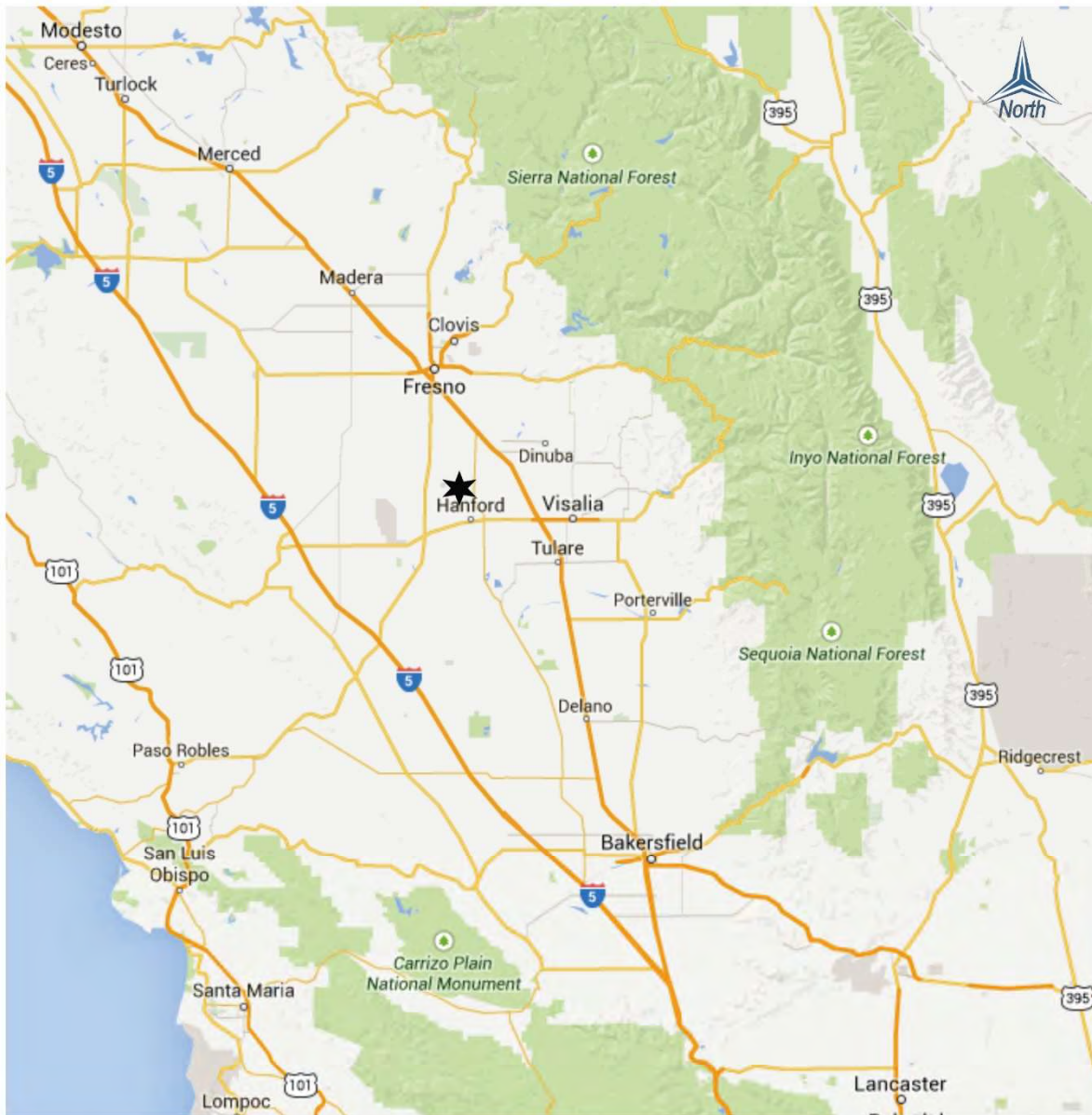
The vacant project site is comprised of four parcels and is located between State Route 198 and the San Joaquin Valley Railroad in the City of Hanford (City), in Kings County (Kings). 5th Street cuts through the project site in an east/west direction and Campus Drive cuts through the project in a north/south direction. In addition, the Peoples Ditch runs through the project site.

**Table 1-1**  
**Project Components**

| PROJECT COMPONENTS          | SIZE/UNIT  | DESCRIPTION                                                                                                                                                                                                                                                                            |
|-----------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ambulatory Surgery Center   | 22,525 sf  | This facility is used to handle approximately 25 surgical procedures per day. There will be approximately 12 employees. This only operates weekdays.                                                                                                                                   |
| Specialty Clinic            | 12,445 sf  | This will be an Office of Statewide Health Planning and Development's (OSHPD) 3 facility, which in turn will approve advanced scope for medical care (i.e.: radiology/oncology. This will be a Monday-Saturday facility.                                                               |
| Medical Office Building     | 24,890 sf  | This will be standard weekday medical offices.                                                                                                                                                                                                                                         |
| Psychiatric Health Facility | 12,445 sf  | This is a psychiatric health care facility. This will consist of 24 patients who stay an average of 5 days. There will be approximately 10 employees and this use will operate 24/7. There will be approximately 4 admissions/discharges per day all done via ambulance.               |
| Hotel & Conference Center   | 105 Rooms  | This will be a standard traffic count for hotels and will be a limited service hotel. The conference center will be used on an average of 2 times per week including weekends.                                                                                                         |
| Nursing College             | 35,000 sf  | This is a m-sat operation. The School hosts 4 classes per scheduling window and offer three scheduling windows per day. Average class length is 2.5 hours. Average student enrollment is 8 students per class. Total classes of 12 per day and start at 8am and finish at 930pm.       |
| Skilled Nursing Facility    | 54,611 sf  | Skilled nursing facility with average of 1.5 admits per day and 1 discharge per day. Staff ratio of 1:6 with a total of 59 beds. It is a 24/7 operation and there are usually approximately 20 visitors/service provider visits per day. No patients/residents have access to vehicles |
| Memory Care                 | 34,480 sf  | Like above SNF, however longer length of stay (average stay of 45 days) so less vehicle traffic inbound and outbound. Same staff ratio and same visit count by visitors/service providers.                                                                                             |
| Assisted Living Facility    | 34,380 sf  | Limited use of vehicles for residents. On average ¼ of residents have vehicles parked full time at facility. Majority of residents use facilities bus transportation. This is 24/7 as well and staff ratio is 1:8.                                                                     |
| Multi-Family Apartment      | 90 Units   | Standard                                                                                                                                                                                                                                                                               |
| Medical/Commercial          | 114,000 sf | This will be standard weekday medical offices.                                                                                                                                                                                                                                         |

**Hanford Place Development**  
**Regional Location**

**Figure**  
**1-1**



**LEGEND**

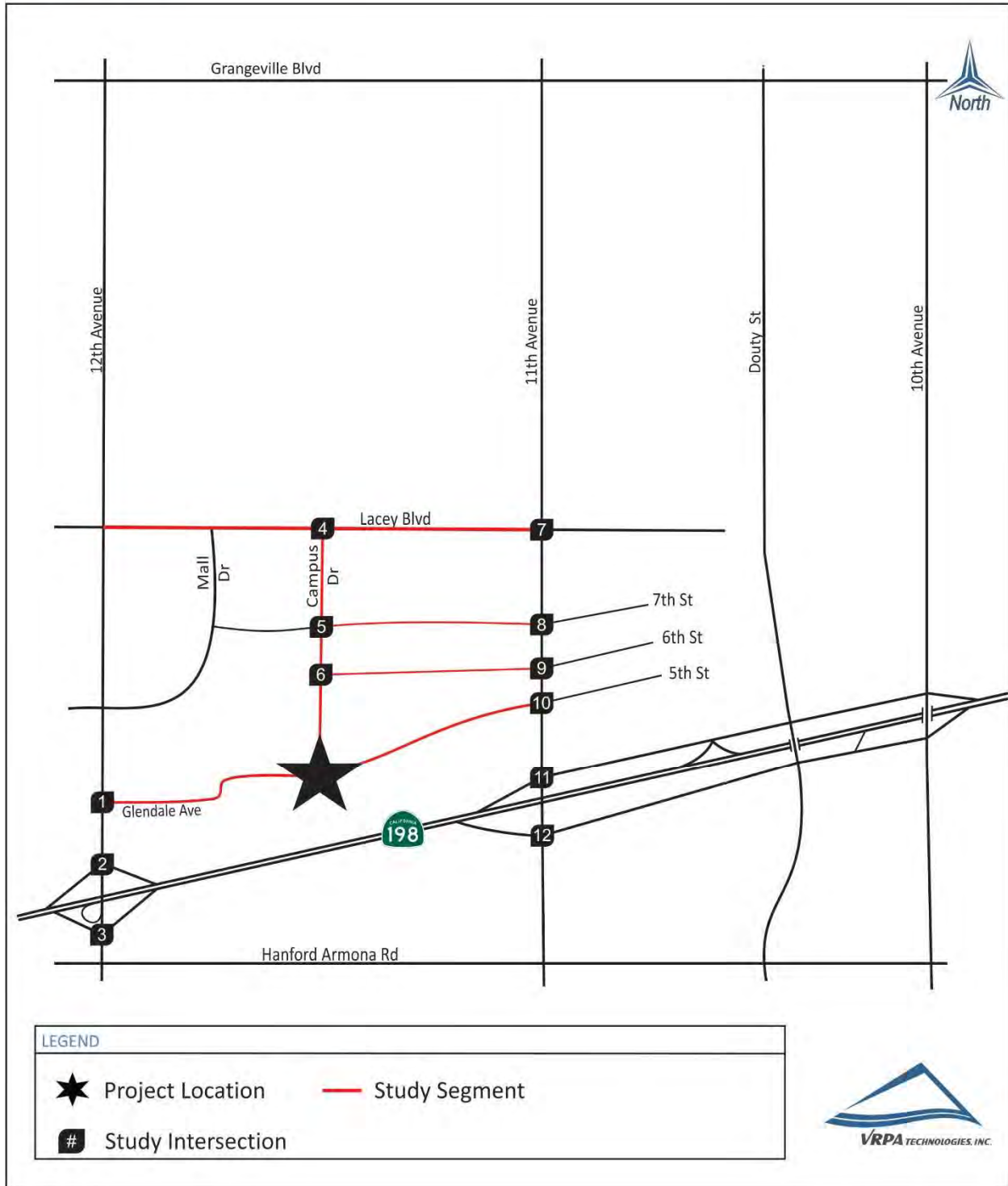
★ Project Location





**Hanford Place Development  
Project Location**

**Figure  
1-2**





### 1.1.1 Project Access

Vehicular access to the site would be provided by Glendale Avenue, 5th Street, and Campus Drive. The extension of these roadways would be constructed to City standards and would be dedicated as public right of way. The proposed project would also construct a roundabout, which would also be dedicated as public right of way and would be constructed to Caltrans or City-approved standards. As part of the project, Glendale Avenue would be realigned at the northwest corner of the Hanford Veterinary Hospital development. The existing knuckle would be removed, and Glendale Avenue would be realigned using speed-specific design curves. Any new portions of Glendale Avenue would be dedicated as public right of way and any portion of existing right of way not used would be abandoned. 5th Street would be extended starting at the existing alignment before realigning to the roundabout. In addition, the proposed project would provide 1,466 parking spaces throughout the project site.

### 1.1.2 Study Area

The study intersections and roadway segments included in this TIS are listed below and shown in Figure 1-2. The study area outlined below was developed in consultation with City of Hanford staff.

#### Intersections

- ✓ 12<sup>th</sup> Avenue / Glendale Avenue
- ✓ 12<sup>th</sup> Avenue / SR 198 WB Ramps
- ✓ 12<sup>th</sup> Avenue / SR 198 EB Ramps
- ✓ Campus Drive / Lacey Boulevard
- ✓ Campus Drive / 7<sup>th</sup> Street
- ✓ Campus Drive / 6<sup>th</sup> Street
- ✓ 11<sup>th</sup> Avenue / Lacey Boulevard
- ✓ 11<sup>th</sup> Avenue / 7<sup>th</sup> Street
- ✓ 11<sup>th</sup> Avenue / 6<sup>th</sup> Street
- ✓ 11<sup>th</sup> Avenue / 5<sup>th</sup> Street
- ✓ 11<sup>th</sup> Avenue / 4<sup>th</sup> Street-SR 198 WB On Ramp
- ✓ 11<sup>th</sup> Avenue / 3<sup>rd</sup> Street-SR 198 EB Off Ramp

#### Segments

- ✓ Lacey Boulevard
  - 12<sup>th</sup> Avenue to Campus Drive
  - Campus Drive to 11<sup>th</sup> Avenue
- ✓ 7<sup>th</sup> Street
  - Campus Drive to 11<sup>th</sup> Avenue

- ✓ 6th Street
  - Campus Drive to 11<sup>th</sup> Avenue
- ✓ Glendale Avenue
  - East of 12<sup>th</sup> Avenue
- ✓ 5<sup>th</sup> Avenue
  - West of 11<sup>th</sup> Avenue
- ✓ Campus Drive
  - Lacey Boulevard to Glendale Avenue

### 1.1.3 Study Scenarios

The TIS completed for the Project includes level of service (LOS) analysis for the following traffic scenarios.

- ✓ Existing Conditions
- ✓ Existing Plus Project
- ✓ Near-Term Plus Project
- ✓ Cumulative Year 2042 Without Project
- ✓ Cumulative Year 2042 Plus Project

## 1.2 Methodology

When preparing a TIS, guidelines set by affected agencies are followed. In analyzing street and intersection capacities the Level of Service (LOS) methodologies are applied. LOS standards are applied by transportation agencies to quantitatively assess a street and highway system's performance. In addition, safety concerns are analyzed to determine the need for appropriate mitigation resulting from increased traffic near sensitive uses, the need for dedicated ingress and egress access lanes to the project, and other evaluations such as the need for signalized intersections or other improvements. Guidelines incorporated in the Highway Capacity Manual (HCM), 6<sup>th</sup> Edition, published in 2016 were also used in the development of this TIS.

### 1.2.1 Intersection Analysis

Intersection LOS analysis was conducted using the Synchro software program. Synchro supports HCM methodologies and is deemed an acceptable program by City of Hanford staff for assessment of traffic impacts. Levels of Service can be determined for both signalized and unsignalized intersections.

Tables 1-2 and 1-3 indicate the ranges in the amounts of average delay for a vehicle at signalized and unsignalized intersections for the various levels of service ranging from LOS "A" to "F".

The signalized LOS standards applied to calculate intersection LOS are in accordance with the current edition of the HCM. Intersection turning movement counts and roadway geometrics used to develop LOS calculations were obtained from field review findings and count data provided from the traffic count sources identified in Section 2.1.

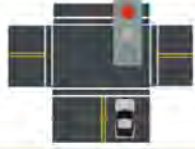
When an unsignalized intersection does not meet acceptable LOS standards, the investigation of the need for a traffic signal shall be evaluated. The latest edition of the California Manual on Uniform Traffic Control Devices for Streets and Highways (California MUTCD) introduces standards for determining the need for traffic signals. The California MUTCD indicates that the satisfaction of one or more traffic signal warrants does not in itself require the installation of a traffic signal. In addition to the warrant analysis, an engineering study of the current or expected traffic conditions should be conducted to determine whether the installation of a traffic signal is justified. The California MUTCD Peak Hour Warrant (Warrant 3) was used to determine if a traffic signal is warranted at unsignalized intersections that fall below current LOS standards.

### 1.2.2 Roadway Segment Analysis

According to the HCM, LOS is categorized by two parameters of traffic: uninterrupted and interrupted flow. Uninterrupted flow facilities do not have fixed elements such as traffic signals that cause interruptions in traffic flow. Interrupted flow facilities do have fixed elements that cause an interruption in the flow of traffic, such as stop signs and signalized intersections along arterial roads. A roadway segment is defined as a stretch of roadway generally located between signalized or controlled intersections.

Segment LOS is important in order to understand whether the capacity of a roadway can accommodate future traffic volumes. Table 1-4 provides a definition of segment LOS. The performance criteria used for evaluating volumes and capacities on the road and highway system for this study were estimated using the Modified HCM-Based LOS Tables which are widely accepted throughout the central valley, including Kings County. The tables consider the capacity of individual road and highway segments based on numerous roadway variables (design speed, passing opportunities, signalized intersections per mile, number of lanes, saturation flow, etc.). These variables were identified and applied to reflect segment LOS conditions. Street segment capacity was determined using information shown in Table 1-5 which comes from the Modified Arterial Level of Service Tables included in Appendix A.

**Table 1-2**  
**Signalized Intersections**  
**Level of Service Definitions**  
**(Highway Capacity Manual)**

| LEVEL OF SERVICE | DEFINITION                                                                                                                                                                                                                                                                                                                    |                                                                                       | AVERAGE TOTAL DELAY (sec/veh) |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------------|
| <b>A</b>         | Describes operations with very low delay. This level of service occurs when there is no conflicting traffic for a minor street.                                                                                                                                                                                               |    | $\leq 10.0$                   |
| <b>B</b>         | Describes operations with moderately low delay. This level generally occurs with a small amount of conflicting traffic causing higher levels of average delay.                                                                                                                                                                |    | $> 10.0 - 20.0$               |
| <b>C</b>         | Describes operations with average delays. These higher delays may result from a moderate amount of minor street traffic. Queues begin to get longer.                                                                                                                                                                          |    | $> 20.0 - 35.0$               |
| <b>D</b>         | Describes a crowded operation, with below average delays. At level D, the influence of congestion becomes more noticeable. Longer delays may result from shorter gaps on the mainline and an increase of minor street traffic. The queues of vehicles are increasing.                                                         |   | $> 35.0 - 55.0$               |
| <b>E</b>         | Describes operations at or near capacity. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor gaps for the minor street to cross and large queues.                                                                                                 |  | $> 55.0 - 80.0$               |
| <b>F</b>         | Describes operations that are at the failure point. This level, considered to be unacceptable to most drivers, often occurs with over-saturation, that is, when arrival flow rates exceed the capacity of the intersection. Insufficient gaps of suitable size exist to allow minor traffic to cross the intersection safely. |  | $> 80.0$                      |

**Table 1-3**  
**Unsignalized Intersections**  
**Level of Service Definitions**  
**(Highway Capacity Manual)**

| LEVEL OF SERVICE | DEFINITION                                                                                                        |                                                                                       | AVERAGE TOTAL DELAY (sec/veh) |
|------------------|-------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------------|
| A                | No delay for stop-controlled approaches.                                                                          |    | 0 - 10.0                      |
| B                | Describes operations with minor delay.                                                                            |    | > 10.0 - 15.0                 |
| C                | Describes operations with moderate delays.                                                                        |    | > 15.0 - 25.0                 |
| D                | Describes operations with some delays.                                                                            |   | > 25.0 - 35.0                 |
| E                | Describes operations with high delays and long queues.                                                            |  | > 35.0 - 50.0                 |
| F                | Describes operations with extreme congestion, with very high delays and long queues unacceptable to most drivers. |  | > 50.0                        |



**Table 1-4**  
**Roadway Segment**  
**Level of Service Definitions**  
**(Highway Capacity Manual)**

| LEVEL OF SERVICE | DEFINITION                                                                                                                                                                                                                                                                                                                    |                                                                                       |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>A</b>         | Represents free flow. Individual vehicles are virtually unaffected by the presence of others in the traffic stream.                                                                                                                                                                                                           |    |
| <b>B</b>         | Is in the range of stable flow, but the presence of other vehicles in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver.                                                                                        |    |
| <b>C</b>         | Is in the range of stable flow, but marks the beginning of the range of flow in which the operation of individual vehicles becomes significantly affected by interactions with other vehicles in the traffic stream.                                                                                                          |   |
| <b>D</b>         | Is a crowded segment of roadway with a large number of vehicles restricting mobility and a stable flow. Speed and freedom to maneuver are severely restricted, and the driver experiences a generally poor level of comfort and convenience.                                                                                  |  |
| <b>E</b>         | Represents operating conditions at or near the level capacity. All speeds are reduced to a low, but relatively uniform value. Small increases in flow will cause breakdowns in traffic movement.                                                                                                                              |  |
| <b>F</b>         | Is used to define forced or breakdown flow (stop-and-go gridlock). This condition exists when the amount of traffic approaches a point where the amount of traffic exceeds the amount that can travel to a destination. Operations within the queues are characterized by stop and go waves, and they are extremely unstable. |  |

**Table 1-5**  
**Peak Hour Two-Way Volumes**

| Lanes | Division  | Level of Service |       |       |       |
|-------|-----------|------------------|-------|-------|-------|
|       |           | B                | C     | D     | E     |
| 2     | Undivided | *                | 324   | 1,125 | 1,521 |
| 2     | Divided   | *                | 340   | 1,181 | 1,597 |
| 4     | Undivided | 77               | 2,083 | 2,763 | 2,890 |
| 4     | Divided   | 81               | 2,205 | 2,925 | 3,060 |
| 6     | Divided   | 135              | 3,339 | 4,401 | 4,617 |

\* Cannot be achieved using table input value defaults.

### 1.3 Policies to Maintain Level of Service

#### 1.3.1 City of Hanford

An important goal is to maintain acceptable levels of service along the highway, street, and road network. To accomplish this, the City of Hanford adopts minimum levels of service to control congestion that may result as new development occurs.

The City of Hanford General Plan Circulation Element states: “The City of Hanford has adopted an overall LOS standard of C with peak hour LOS standard of D acceptable in some instances. Due to the nature of the roadway system, improvements to existing developed areas are extremely difficult. As a result, there may be instances where a lower LOS is acceptable.”

The City of Hanford General Plan Objective CI 2 states: “Provide timely and effective means of programming and constructing street and highway improvements to maintain an overall Level of Service of “C”, with a peak hour Level of Service of “D” as defined in the Highway Capacity Manual (published by the Transportation Research Board of the National Research Council) or better unless the City’s design considerations or other public health, safety, or welfare factors determine otherwise.”

The City of Hanford General Plan Policy CI 2.2 states: “Street improvements shall be prioritized with emphasis on current and forecasted service levels. Roadways experiencing or forecasted to experience conditions less than Level-of-Service “D” shall require improvements, unless the City’s design considerations or other public health, safety or welfare factors determine otherwise.”

#### 1.3.2 California Department of Transportation (Caltrans)

With the changes brought about by SB 743, Caltrans no longer uses level of service to determine the need for transportation improvements. Instead, the focus is on providing adequate facilities for pedestrians, bicycles, and transit as well as safety considerations for all transportation modes. Guidance is provided in the Transportation Impact Study Guide dated May 20, 2020 and the



Interim Land Development and Intergovernmental Review Safety Review Practitioners Guidance dated July 2020. This guidance was used in determining the need for roadway improvements on Caltrans facilities.

## 1.4 VMT Analysis

Senate Bill 743 (SB 743) went into effect throughout California on July 1, 2020. This legislation changed the performance measure for CEQA transportation studies from level of service to vehicle miles traveled (VMT). An assessment of potential VMT impacts associated with the Project is provided in Chapter 3 to address changes in CEQA requirements.

Since the City of Hanford has not adopted methodologies or thresholds for VMT analyses related to SB 743, the VMT analysis was conducted using statewide guidance provided by the Governor's Office of Planning and Research (OPR) in their Technical Advisory on Evaluating Transportation Impacts in CEQA (OPR, December 2018). OPR recommends comparing project VMT/capita and VMT/employee to regional averages to determine the level of significance of project impacts. VMT/capita and VMT/employee values for the project as well as regional averaged were obtained from an online VMT analysis tool provided by the Kings County Association of Governments (KCAG).

## 2.0 Existing Conditions

### 2.1 Existing Traffic Counts and Roadway Geometrics

The first step toward assessing Project traffic impacts is to assess existing traffic conditions. Existing traffic counts were estimated considering the Kings County Association of Governments (KCAG) travel model and historic traffic counts in the study area given the on-going COVID-19 pandemic. Following is the methodology used for the development of existing traffic counts:

- ✓ A comparison of the KCAG base year and future year travel model showed that the growth in the study area is approximately 2% per year. The 2% per year growth rate was applied to historical ADT counts collected in the study area to estimate Year 2020 pre-COVID conditions.
- ✓ The estimated pre-COVID year 2020 ADT values (obtained using the 2% per year growth rate) were compared to October 2020 ADT values. Results of the comparison indicated that traffic counts taken in October 2020 ADT (i.e. during COVID) should be increased by a factor of 1.30 to estimate 2020 pre-COVID levels.
- ✓ Where intersection turning movement counts in years prior to 2020 are available, a 2% per year growth rate was applied to estimate year 2020 conditions.
- ✓ Where intersection turning movement counts are not available in years prior to 2020, a factor of 1.3 was applied to the October 2020 turning movement counts collected in the study area.

Traffic count data worksheets are provided in Appendix B.

### 2.2 Existing Functional Roadway Classification System

Functional classification is the process by which streets and highways are grouped into classes, or systems, according to the type of service they are intended to provide. Fundamental to this process is the recognition that individual streets and highways do not serve travel independently in any major way. Rather, most travel involves movement through a network of roads.

The following are general descriptions of the roadway types shown in the City of Hanford Circulation Element:

- ✓ **State Freeways and Highways** – There are two state facilities serving the Hanford Planning Area, State Highway 198 and State Highway 43. The segment of State Highway 198, which passes through the Planning Area, is considered a freeway. State Highway 43 is a two-lane facility and functions as an arterial and major transportation route between Hanford and Fresno to the north and Corcoran to the south.

- ✓ **Arterial** – Hanford's arterial street pattern is generally one-mile spacing between the existing arterials. Exceptions to this spacing include Third, Fourth, Sixth and Seventh Streets, which are in the downtown area and provide for both mobility (to and through downtown), as well as access. These streets do not meet the right-of-way requirements or improvement standards for arterial streets; however, they function as arterial streets.
  - **Lacey Boulevard**
  - **12<sup>th</sup> Avenue**
  - **11<sup>th</sup> Avenue**
- ✓ **Collectors** – The streets shown below are designated as Collector streets, with their own set of development criteria. Similar to some Arterials, Collector streets have evolved from heavy use as opposed to formal development standards. Because of this, some streets may be designated Collectors, but not have all of the improvements required for new Collectors such as right-of-way width, travel way paving, and limited access.
  - **Campus Drive**
  - **7<sup>th</sup> Street**
  - **Glendale Avenue**
  - **5<sup>th</sup> Street**
- ✓ **Local Streets** – Roadways that provide access to individual homes and businesses. Local streets have one lane in each direction. Local streets connect single family homes and other uses not appropriate adjacent to major roadways, to the arterial-collector network.

## 2.3 Affected Streets and Highways

Street and highway intersections and segments near and adjacent to the Project site were analyzed to determine levels of service utilizing HCM-based methodologies described previously. The study intersections and street and highway segments included in this TIS are listed below. Counts were taken on Wednesday, July 18, 2018.

### Intersections

- ✓ 12<sup>th</sup> Avenue / Glendale Avenue
- ✓ 12<sup>th</sup> Avenue / SR 198 WB Ramps
- ✓ 12<sup>th</sup> Avenue / SR 198 EB Ramps
- ✓ Campus Drive / Lacey Boulevard
- ✓ Campus Drive / 7<sup>th</sup> Street
- ✓ Campus Drive / 6<sup>th</sup> Street
- ✓ 11<sup>th</sup> Avenue / Lacey Boulevard
- ✓ 11<sup>th</sup> Avenue / 7<sup>th</sup> Street
- ✓ 11<sup>th</sup> Avenue / 6<sup>th</sup> Street

- ✓ 11<sup>th</sup> Avenue / 5<sup>th</sup> Street
- ✓ 11<sup>th</sup> Avenue / 4<sup>th</sup> Street-SR 198 WB On Ramp
- ✓ 11<sup>th</sup> Avenue / 3<sup>rd</sup> Street-SR 198 EB Off Ramp

### Segments

- ✓ Lacey Boulevard
  - 12<sup>th</sup> Avenue to Campus Drive
  - Campus Drive to 11<sup>th</sup> Avenue
- ✓ 7<sup>th</sup> Street
  - Campus Drive to 11<sup>th</sup> Avenue
- ✓ 6<sup>th</sup> Street
  - Campus Drive to 11<sup>th</sup> Avenue
- ✓ Glendale Avenue
  - East of 12<sup>th</sup> Avenue
- ✓ 5<sup>th</sup> Avenue
  - West of 11<sup>th</sup> Avenue
- ✓ Campus Drive
  - Lacey Boulevard to Glendale Avenue

The existing lane geometry at study area intersections is shown in Figure 2-1. Figures 2-2 and 2-3 show existing traffic volumes for the AM and PM peak hours in the study area.

## 2.4 Level of Service

### 2.4.1 Intersection Capacity Analysis

All intersection LOS analyses were estimated using Synchro 10 Software. Various roadway geometrics, traffic volumes, and properties (peak hour factors, storage pocket length, etc) were input into the Synchro 10 Software program to accurately determine the travel delay and LOS for each Study scenario. The intersection LOS and delays reported represent the 6<sup>th</sup> Edition HCM outputs. Synchro assumptions, listed below, show the various Synchro inputs and methodologies used in the analysis.

- ✓ **Lane Geometry**
  - Storage lengths for turn lanes for existing intersections were obtained from aerial photos and rounded to the nearest 25 feet
  - VRPA conducted a field study of the specified intersections and segments to verify lane

geometry and intersection control as well as to obtain other pertinent data such as signal timing and phasing, where applicable.

✓ **Traffic Conditions**

- Peak hour factors (PHF) for each intersection approach was obtained from traffic counts in the study area and were utilized for Existing Conditions, Existing Plus Project, and Near-term (Opening Year) Plus Project conditions. For all future scenarios, a PHF of 0.92 was applied unless the existing PHF was greater than 0.92
- Heavy vehicle percentages were based on the HCM default
- Roadway link speed limits were observed in the field and input into the Synchro network to determine roadway link speeds
- Queuing conditions for left and right-turn lanes at all study intersections was based upon Section 400 of Caltrans' Highway Design Manual

Results of the analysis show that the 12<sup>th</sup> Avenue at Glendale Avenue intersection currently exceeds the City of Hanford's minimum level of service criteria during the PM peak hour. Table 2-1 shows the intersection LOS for the existing conditions. Synchro 10 (HCM 6<sup>th</sup> Edition) Worksheets are provided in Appendix C.

#### 2.4.2 *Queuing Analysis*

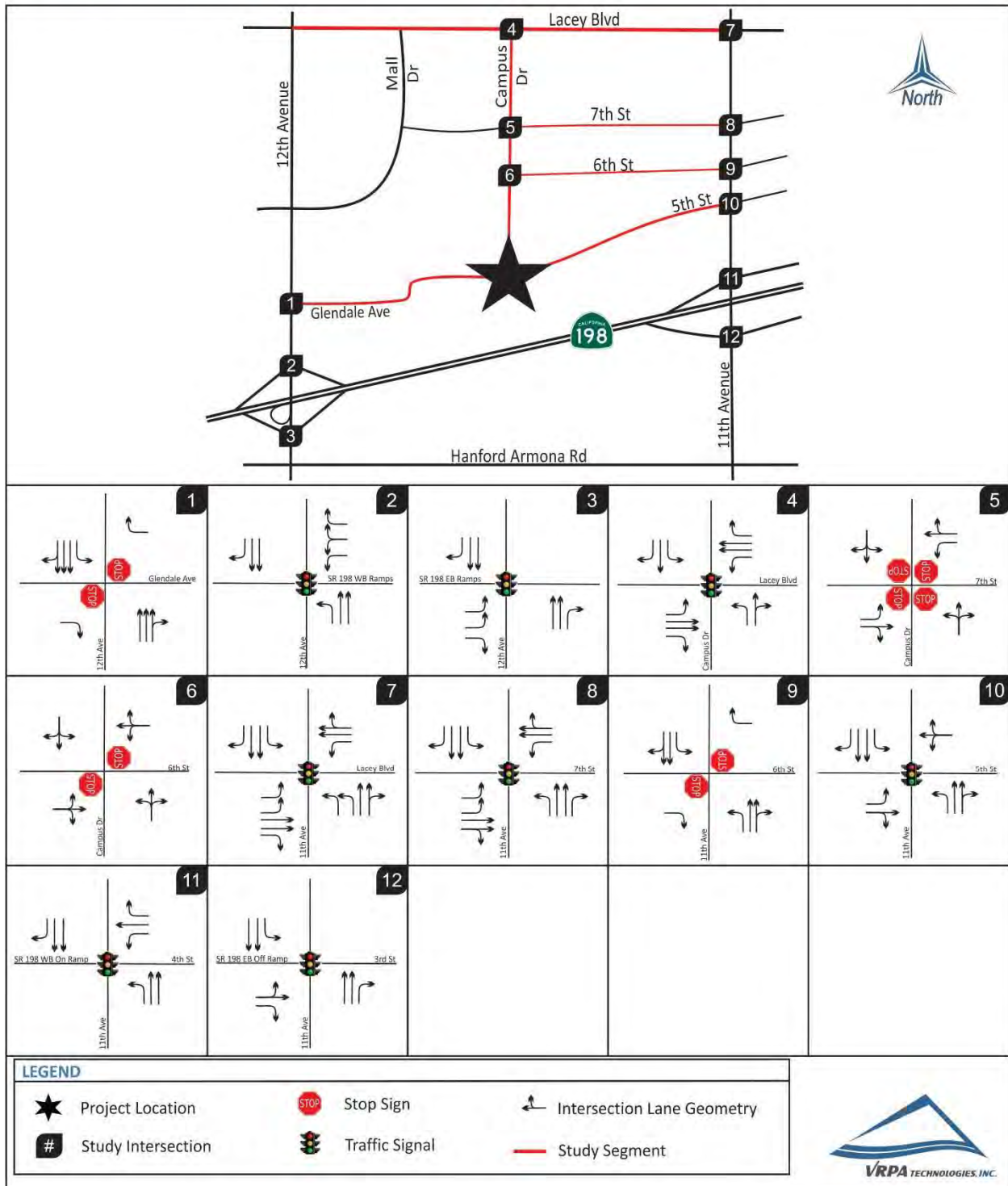
Table 2-2 provides a queue length summary for study intersections for the Existing scenario. Traffic queue lengths at an intersection or along a roadway segment assist in the determination of a roadway's overall performance. Excessive queuing at an intersection increases vehicle delay and reduces capacity. If a dedicated left turn lane doesn't provide adequate storage, vehicles will queue beyond the left turn storage pocket and into other travel lanes, thus increasing vehicle delay and reducing capacity. The queuing analyses is based upon methodology presented in Chapter 400 of Caltrans' Highway Design Manual (HDM), which is included in Appendix D. The queue results shown in Table 2-2 represent the approximate queue lengths for the respective lane movements.

#### 2.4.2 *Roadway Segment Capacity Analysis*

Results of the segment analysis along the existing street and highway system are reflected in Table 2-3. The performance criteria used for evaluating volumes and capacities on the road and highway system for this study were estimated using the Modified Arterial Level of Service Tables included in Table 1-5 and Appendix A. Results of the analysis show that study roadway segments are currently operating at acceptable levels of service.

## Hanford Place Development Existing Lane Geometry

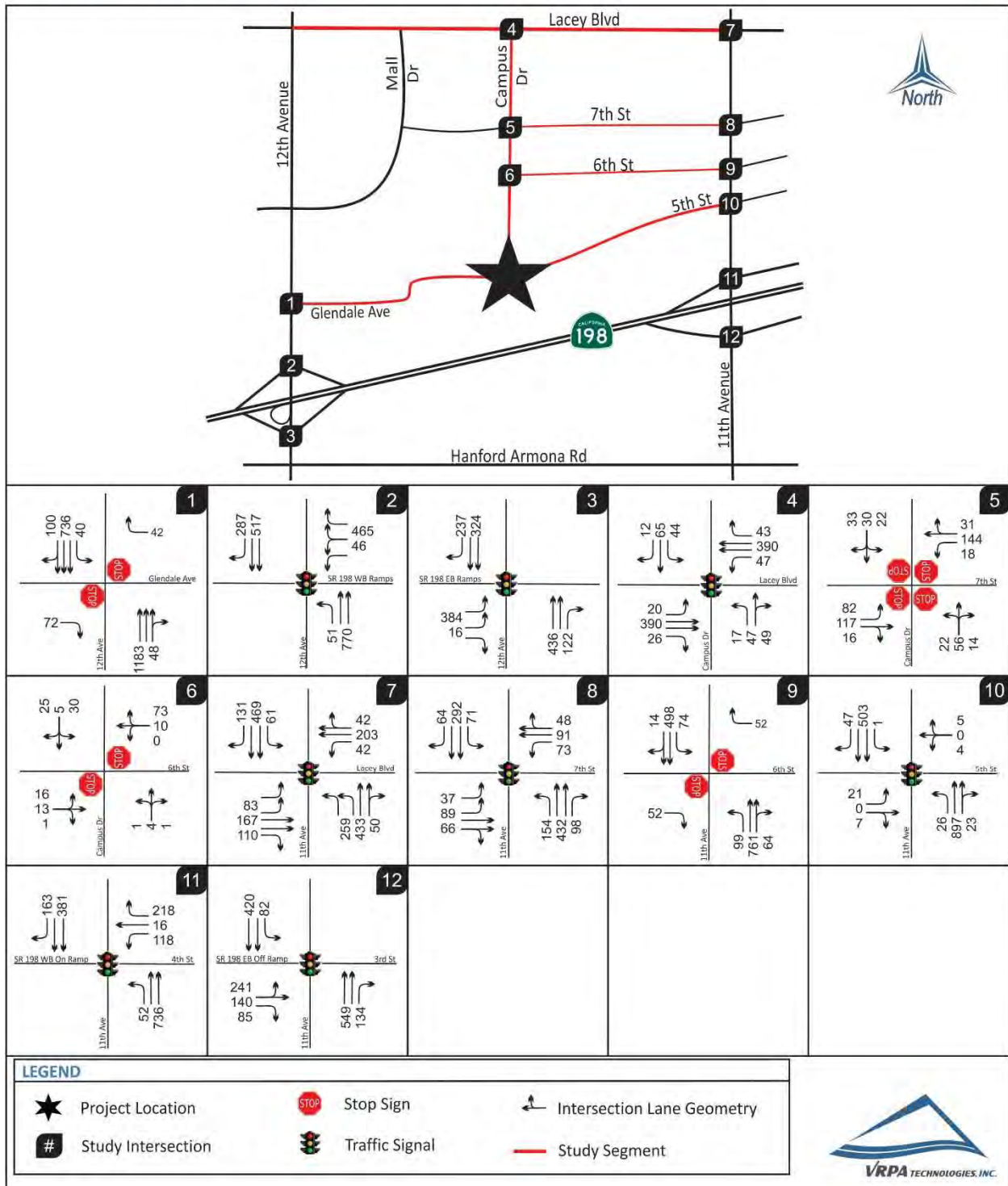
Figure  
2-1





## Hanford Place Development Existing AM Peak Hour Traffic

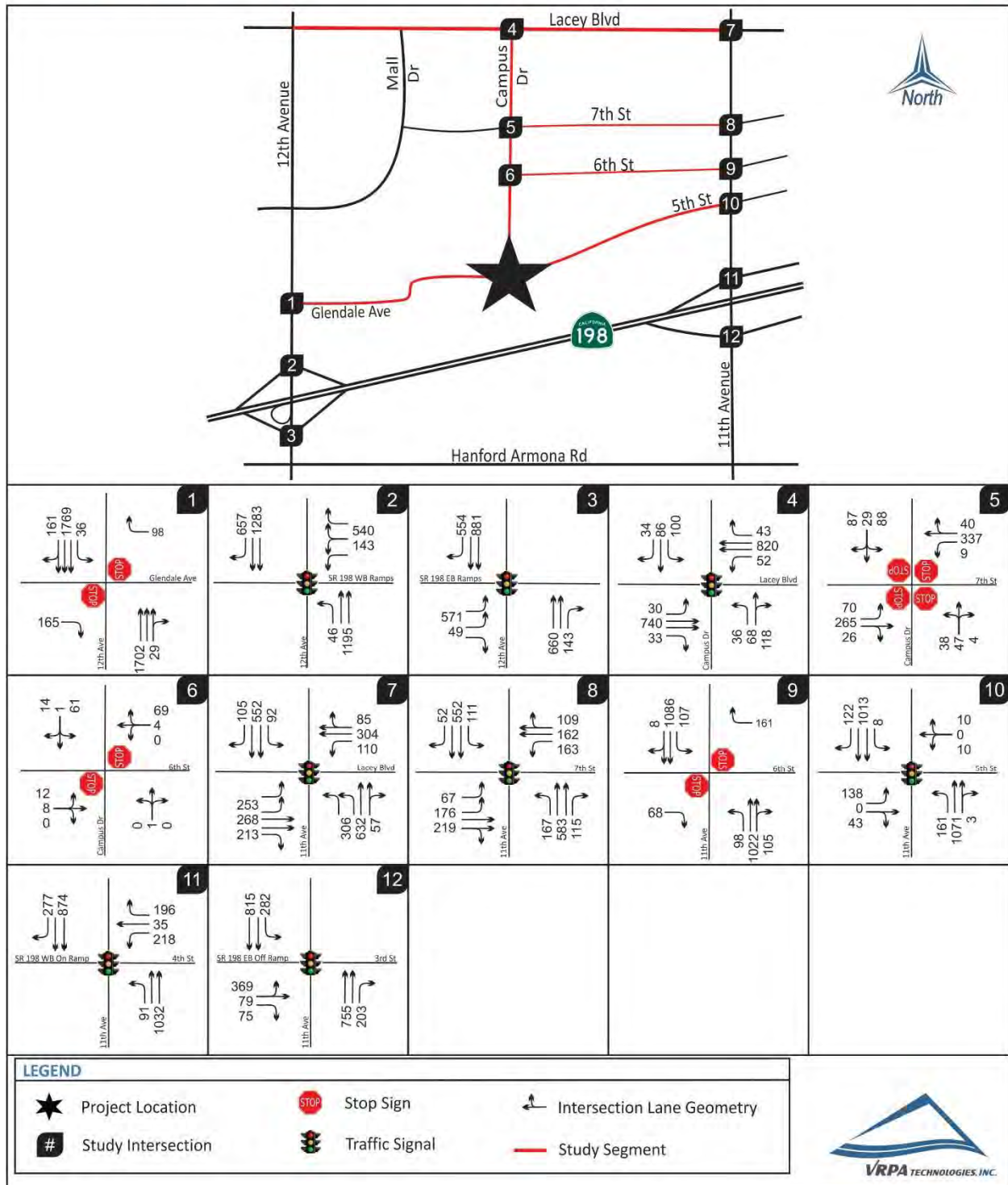
Figure  
2-2





## Hanford Place Development Existing PM Peak Hour Traffic

Figure  
2-3



**Table 2-1**  
**Existing Intersection Operations**

| INTERSECTION                                    | CONTROL           | TARGET LOS      | PEAK HOUR | EXISTING     |            |
|-------------------------------------------------|-------------------|-----------------|-----------|--------------|------------|
|                                                 |                   |                 |           | DELAY        | LOS        |
| 1. 12th Avenue / Glendale Avenue                | Two-Way Stop Sign | D               | AM        | 22.7         | C          |
|                                                 |                   |                 | PM        | <b>100.4</b> | <b>F +</b> |
| 2. 12th Avenue / SR 198 WB Ramps                | Signalized        | -- <sup>1</sup> | AM        | 13.8         | B          |
|                                                 |                   |                 | PM        | 17.8         | B          |
| 3. 12th Avenue / SR 198 EB Ramps                | Signalized        | -- <sup>1</sup> | AM        | 11.9         | B          |
|                                                 |                   |                 | PM        | 13.0         | B          |
| 4. Campus Drive / Lacey Boulevard               | Signalized        | D               | AM        | 25.0         | C          |
|                                                 |                   |                 | PM        | 28.0         | C          |
| 5. Campus Drive / 7th Street                    | All-Way Stop Sign | D               | AM        | 9.9          | A          |
|                                                 |                   |                 | PM        | 15.6         | C          |
| 6. Campus Drive / 6th Street                    | Two-Way Stop Sign | D               | AM        | 10.4         | B          |
|                                                 |                   |                 | PM        | 10.6         | B          |
| 7. 11th Avenue / Lacey Boulevard                | Signalized        | D               | AM        | 20.4         | C          |
|                                                 |                   |                 | PM        | 27.5         | C          |
| 8. 11th Avenue / 7th Street                     | Signalized        | D               | AM        | 18.9         | C          |
|                                                 |                   |                 | PM        | 28.8         | C          |
| 9. 11th Avenue / 6th Street                     | Two-Way Stop Sign | D               | AM        | 12.6         | B          |
|                                                 |                   |                 | PM        | 17.4         | C          |
| 10. 11th Avenue / 5th Street                    | Signalized        | D               | AM        | 4.9          | A          |
|                                                 |                   |                 | PM        | 12.1         | B          |
| 11. 11th Avenue / 4th Street-SR 198 WB On Ramp  | Signalized        | -- <sup>1</sup> | AM        | 12.0         | B          |
|                                                 |                   |                 | PM        | 12.7         | B          |
| 12. 11th Avenue / 3rd Street-SR 198 EB Off Ramp | Signalized        | -- <sup>1</sup> | AM        | 18.6         | B          |
|                                                 |                   |                 | PM        | 25.1         | C          |

DELAY is measured in seconds

LOS = Level of Service / **BOLD** denotes LOS standard has been exceeded

For signalized and all-way stop intersections, delay results show the average for the entire intersection. For one-way and two-way stop controlled intersections, delay results show the delay for the worst movement.

1 - With the changes brought about by SB 743, Caltrans no longer uses level of service to determine the need for transportation improvements. Instead, focus is on providing adequate facilities for pedestrians, bicycles, and transit as well as safety considerations for all transportation modes. Guidance is provided in the Transportation Impact Study Guide dated May 20, 2020 and the Interim Land Development and Intergovernmental Review Safety Review Practitioners Guidance dated July 2020. This guidance will be used in determining the need for roadway improvements on Caltrans facilities.

+ Meets peak hour signal warrants.

**Table 2-2**  
**Existing Queuing Operations**

| INTERSECTION                                | EXISTING QUEUE<br>STORAGE LENGTH (ft) |         | EXISTING<br>CONDITIONS |             |
|---------------------------------------------|---------------------------------------|---------|------------------------|-------------|
|                                             |                                       |         | AM<br>Queue            | PM<br>Queue |
| 12th Avenue / Glendale Avenue               | SB Left                               | 125     | 33                     | 30          |
| 12th Avenue / SR 198 WB Ramps               | NB Left                               | 400     | 43                     | 38          |
|                                             | WB Approach                           | 3 @ 275 | 426                    | 569         |
| 12th Avenue / SR 198 EB Ramps               | SB Right                              | 600     | 198                    | 462         |
|                                             | EB Left                               | 2 @ 875 | 320                    | 476         |
|                                             | EB Right                              | 850     | 13                     | 41          |
| Campus Drive / Lacey Boulevard              | NB Left                               | 75      | 14                     | 30          |
|                                             | SB Left                               | 200     | 37                     | 83          |
|                                             | SB Right                              | 100     | 10                     | 28          |
|                                             | EB Left                               | 200     | 17                     | 25          |
|                                             | EB Right                              | 100     | 22                     | 28          |
|                                             | WB Left                               | 125     | 39                     | 43          |
|                                             | WB Right                              | 100     | 36                     | 36          |
| Campus Drive / 7th Street                   | EB Left                               | 100     | 68                     | 58          |
|                                             | WB Left                               | 100     | 15                     | 8           |
| 11th Avenue / Lacey Boulevard               | NB Left                               | 2 @ 200 | 216                    | 255         |
|                                             | SB Left                               | 150     | 51                     | 77          |
|                                             | SB Right                              | 150     | 109                    | 88          |
|                                             | EB Left                               | 2 @ 125 | 69                     | 211         |
|                                             | EB Right                              | 100     | 92                     | <b>178</b>  |
|                                             | WB Left                               | 100     | 35                     | 92          |
| 11th Avenue / 7th Street                    | NB Left                               | 125     | <b>128</b>             | <b>139</b>  |
|                                             | NB Right                              | 100     | 82                     | 96          |
|                                             | SB Left                               | 100     | 59                     | 93          |
|                                             | SB Right                              | 100     | 53                     | 43          |
|                                             | EB Left                               | 2 @ 75  | 31                     | 56          |
|                                             | WB Left                               | 125     | 61                     | <b>136</b>  |
| 11th Avenue / 6th Street                    | NB Left                               | 75      | <b>83</b>              | <b>82</b>   |
|                                             | SB Left                               | 125     | 62                     | 89          |
| 11th Avenue / 5th Street                    | NB Left                               | 150     | 22                     | 134         |
|                                             | SB Left                               | 50      | 1                      | 7           |
|                                             | SB Right                              | 50      | 39                     | <b>102</b>  |
|                                             | EB Left                               | 50      | 18                     | <b>115</b>  |
| 11th Avenue / 4th Street-SR 198 WB On Ramp  | NB Left                               | 75      | 43                     | 76          |
|                                             | SB Right                              | 75      | <b>136</b>             | <b>231</b>  |
|                                             | WB Left                               | 125     | 98                     | <b>182</b>  |
| 11th Avenue / 3rd Street-SR 198 EB Off Ramp | NB Right                              | 75      | <b>112</b>             | <b>169</b>  |
|                                             | SB Left                               | 150     | 68                     | <b>235</b>  |
|                                             | EB Right                              | 25      | <b>71</b>              | <b>63</b>   |

Queue is measured in feet / **BOLD** denotes exceedance

**Table 2-3**  
**Existing Segment Operations**

| STREET SEGMENT                      | SEGMENT DESCRIPTION | TARGET LOS | PEAK HOUR | EXISTING |     |
|-------------------------------------|---------------------|------------|-----------|----------|-----|
|                                     |                     |            |           | VOLUME   | LOS |
| Lacey Boulevard                     |                     |            |           |          |     |
| 12th Avenue to Campus Drive         | 4 Lanes Divided     | D          | AM        | 855      | C   |
|                                     |                     |            | PM        | 1,693    | C   |
| Campus Drive to 11th Avenue         | 4 Lanes Divided     | D          | AM        | 963      | C   |
|                                     |                     |            | PM        | 1,873    | C   |
| 7th Street                          |                     |            |           |          |     |
| Campus Drive to 11th Avenue         | 2 Lanes Undivided   | D          | AM        | 346      | D   |
|                                     |                     |            | PM        | 743      | D   |
| 6th Street                          |                     |            |           |          |     |
| Campus Drive to 11th Avenue         | 2 Lanes Undivided   | D          | AM        | 127      | C   |
|                                     |                     |            | PM        | 142      | C   |
| Glendale Avenue                     |                     |            |           |          |     |
| East of 12th Avenue                 | 2 Lanes Undivided   | D          | AM        | 130      | C   |
|                                     |                     |            | PM        | 163      | C   |
| 5th Avenue                          |                     |            |           |          |     |
| West of 11th Avenue                 | 2 Lanes Undivided   | D          | AM        | 101      | C   |
|                                     |                     |            | PM        | 464      | D   |
| Campus Drive                        |                     |            |           |          |     |
| Lacey Bouloevard to Glendale Avenue | 2 Lanes Undivided   | D          | AM        | 251      | C   |
|                                     |                     |            | PM        | 393      | D   |

LOS = Level of Service / **BOLD** denotes LOS standard has been exceeded

## 3.0 Traffic Impacts

This chapter provides an assessment of the traffic the Project is expected to generate and the impact of that traffic on the surrounding street system.

### 3.1 Trip Generation

To assess the impacts that the Project may have on the surrounding roadway network, the first step is to determine Project trip generation. Project trip generation was determined using trip generation rates from the Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition), the ITE Trip Generation Handbook (3rd Edition), information provided by the Project proponent, and engineering judgement. The considerations described above led to the recommended trip generation for weekday AM (7:00-9:00am) and PM (4:00-6:00pm) peak hours shown in Table 3-1.

**Table 3-1**  
**Project Trip Generation**

| LAND USE                                                                                 | Quantity     | DAILY TRIP ENDS (ADT) |              | WEEKDAY AM PEAK HOUR |              |            |            |            | WEEKDAY PM PEAK HOUR |              |            |            |            |
|------------------------------------------------------------------------------------------|--------------|-----------------------|--------------|----------------------|--------------|------------|------------|------------|----------------------|--------------|------------|------------|------------|
|                                                                                          |              | RATE                  | VOLUME       | RATE                 | IN:OUT SPLIT | VOLUME     |            |            | RATE                 | IN:OUT SPLIT | VOLUME     |            |            |
|                                                                                          |              |                       |              |                      |              | IN         | OUT        | TOTAL      |                      |              | IN         | OUT        | TOTAL      |
| Ambulatory Surgery Center <sup>1</sup>                                                   | 22,525 s.f.  | 6.57                  | 148          | 2.62                 | 78:22        | 46         | 13         | 59         | 1.33                 | 29:71        | 9          | 21         | 30         |
| Specialty Clinic (630)                                                                   | 12,445 s.f.  | 38.16                 | 475          | 3.69                 | 78:22        | 36         | 10         | 46         | 3.28                 | 29:71        | 13         | 31         | 44         |
| Medical Office Building (720)                                                            | 24,890 s.f.  | 34.91                 | 869          | 2.61                 | 78:22        | 51         | 14         | 65         | 3.46                 | 28:72        | 24         | 62         | 86         |
| Psychiatric Health Facility <sup>1</sup>                                                 | 12,445 s.f.  | 4.50                  | 56           | 1.77                 | 55:45        | 12         | 10         | 22         | 1.77                 | 45:55        | 10         | 12         | 22         |
| Hotel & Conference Center (310)                                                          | 105 Rooms    | 7.22                  | 758          | 0.45                 | 59:41        | 28         | 19         | 47         | 0.50                 | 51:49        | 27         | 26         | 53         |
| Nursing College (540)                                                                    | 35,000 s.f.  | 20.25                 | 709          | 2.07                 | 77:23        | 55         | 17         | 72         | 1.61                 | 50:50        | 32         | 33         | 65         |
| Skilled Nursing Facility (620)                                                           | 54,611 s.f.  | 6.64                  | 363          | 0.55                 | 78:22        | 23         | 7          | 30         | 0.59                 | 41:59        | 13         | 19         | 32         |
| Memory Care (620)                                                                        | 34,480 s.f.  | 6.64                  | 229          | 0.55                 | 78:22        | 15         | 4          | 19         | 0.59                 | 41:59        | 9          | 12         | 21         |
| Assisted Living Facility (254)                                                           | 34,380 s.f.  | 4.19                  | 144          | 0.38                 | 78:22        | 10         | 3          | 13         | 0.49                 | 30:70        | 5          | 12         | 17         |
| Multi-Family Apartment (220)                                                             | 90 Units     | 7.11                  | 640          | 0.48                 | 23:77        | 10         | 33         | 43         | 0.60                 | 63:37        | 34         | 20         | 54         |
| Medical/Commercial (720)                                                                 | 114,200 s.f. | 34.45                 | 3,934        | 2.63                 | 78:22        | 234        | 66         | 300        | 3.50                 | 28:72        | 112        | 288        | 400        |
| <b>SUBTOTAL TRIP GENERATION</b>                                                          |              |                       | <b>8,325</b> |                      |              | <b>520</b> | <b>196</b> | <b>716</b> |                      |              | <b>288</b> | <b>536</b> | <b>824</b> |
| <b>Internal Vehicle Trips (NCHRP Internal Trip Capture Estimation Tool) <sup>2</sup></b> |              |                       | <b>833</b>   |                      |              | <b>52</b>  | <b>20</b>  | <b>72</b>  |                      |              | <b>29</b>  | <b>54</b>  | <b>82</b>  |
| <b>TOTAL EXTERNAL TRIP GENERATION</b>                                                    |              |                       | <b>7,493</b> |                      |              | <b>468</b> | <b>176</b> | <b>644</b> |                      |              | <b>259</b> | <b>482</b> | <b>742</b> |

Source: Generation factors from ITE Trip Generation Manual, 10th Edition.  
Trip ends are one-way traffic movements, entering or leaving.  
The numbers in parenthesis are ITE land use codes.

1. Information provided by Project Representatives.

2. Internal trip capture rate = 10%.

### 3.2 Trip Distribution

Project trip distribution percentages for inbound and outbound traffic are shown in Figure 3-1a and 3-1b, respectively. These percentages are based upon knowledge of the study area, engineering judgement, prevailing traffic patterns in the study area, major routes, population centers, other existing development and review and comment by the City of Hanford and Caltrans.

Vehicular access to the site would be provided by Glendale Avenue, 5th Street, and Campus Drive. The extension of these roadways would be constructed to City standards and would be dedicated as public right of way. The proposed project would also construct a roundabout, which would also be dedicated as public right of way and would be constructed to Caltrans or City-approved standards. As part of the project, Glendale Avenue would be realigned at the northwest corner of the Hanford Veterinary Hospital development. The existing knuckle would be removed, and Glendale Avenue would be realigned using speed-specific design curves. Any new portions of Glendale Avenue would be dedicated as public right of way and any portion of existing right of way not used would be abandoned. 5th Street would be extended starting at the existing alignment before realigning to the roundabout. In addition, the proposed project would provide 1,466 parking spaces throughout the project site.

### 3.3 Project Traffic

Project traffic as shown in Table 3-1 was distributed to the roadway system using the trip distribution percentages shown in Figures 3-1a and 3-1b. A graphical representation of the resulting AM and PM peak hour Project trips used is shown in Figures 3-2 and 3-3.

### 3.4 Existing Plus Project Traffic Conditions

An Existing Plus Project Scenario was analyzed to include existing traffic plus traffic generated by the Project. The resulting traffic is shown in Figures 3-4 and 3-5.

### 3.5 Near-Term Traffic Conditions

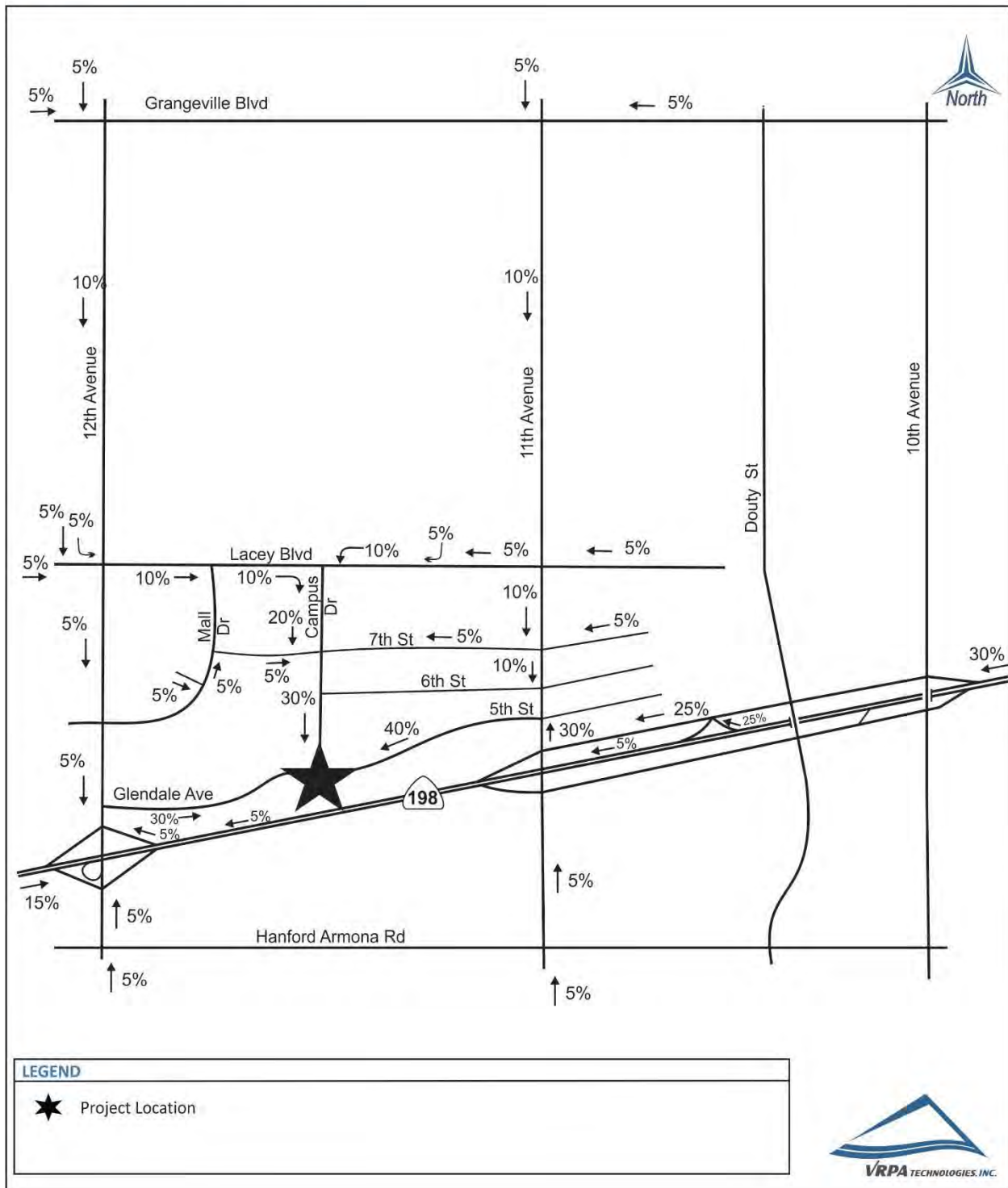
Traffic conditions with the Project in the Year 2024 were estimated by applying a growth rate of 2% per year to the existing traffic volumes. A comparison of the KCAG base year and future year travel model showed that the growth in the study area is approximately 2% per year.

The resulting traffic for the Near-Term scenario is shown in Figures 3-6 and 3-7.



**Hanford Place Development**  
**Project Trip Distribution - Inbound**

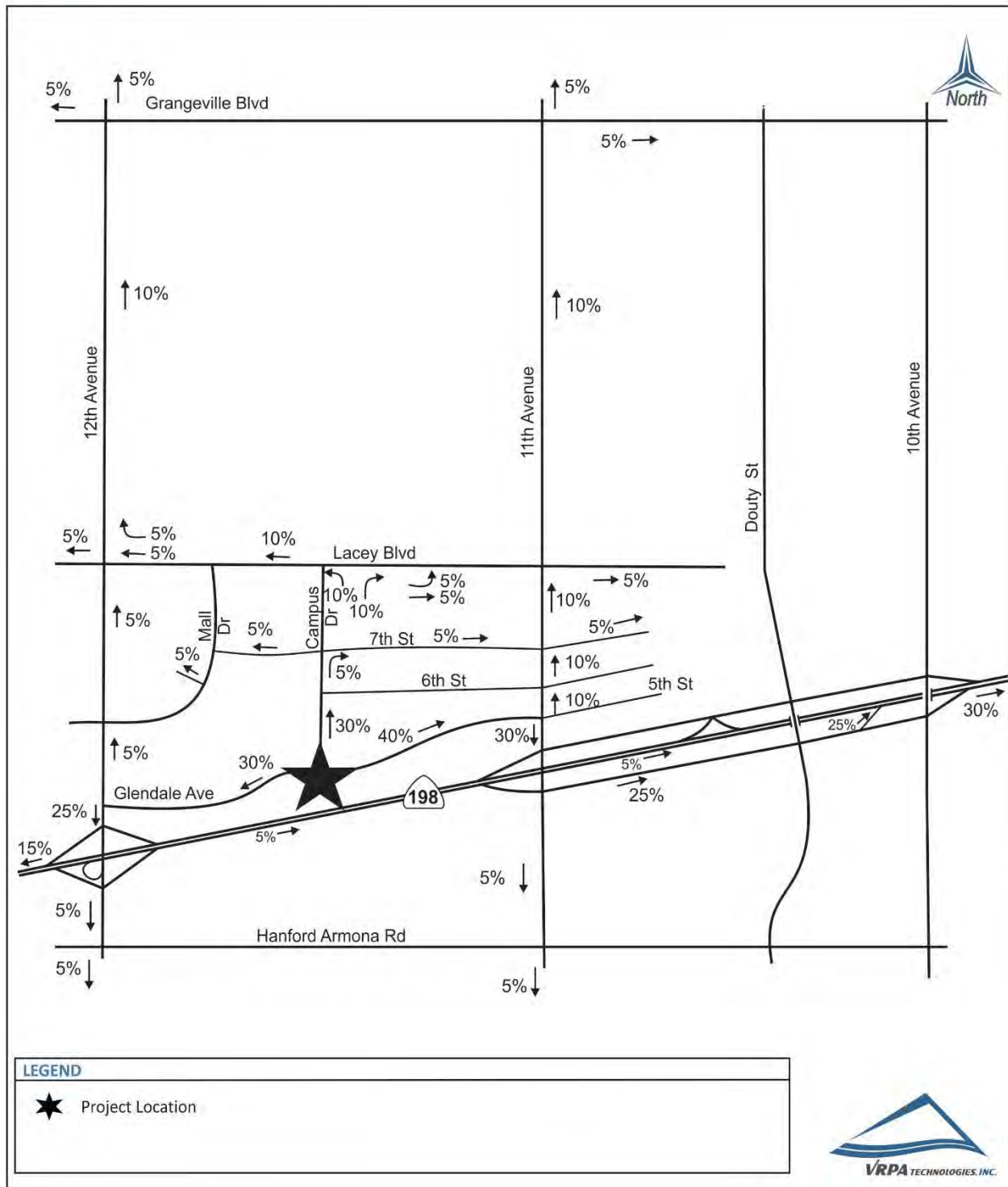
**Figure**  
**3-1a**





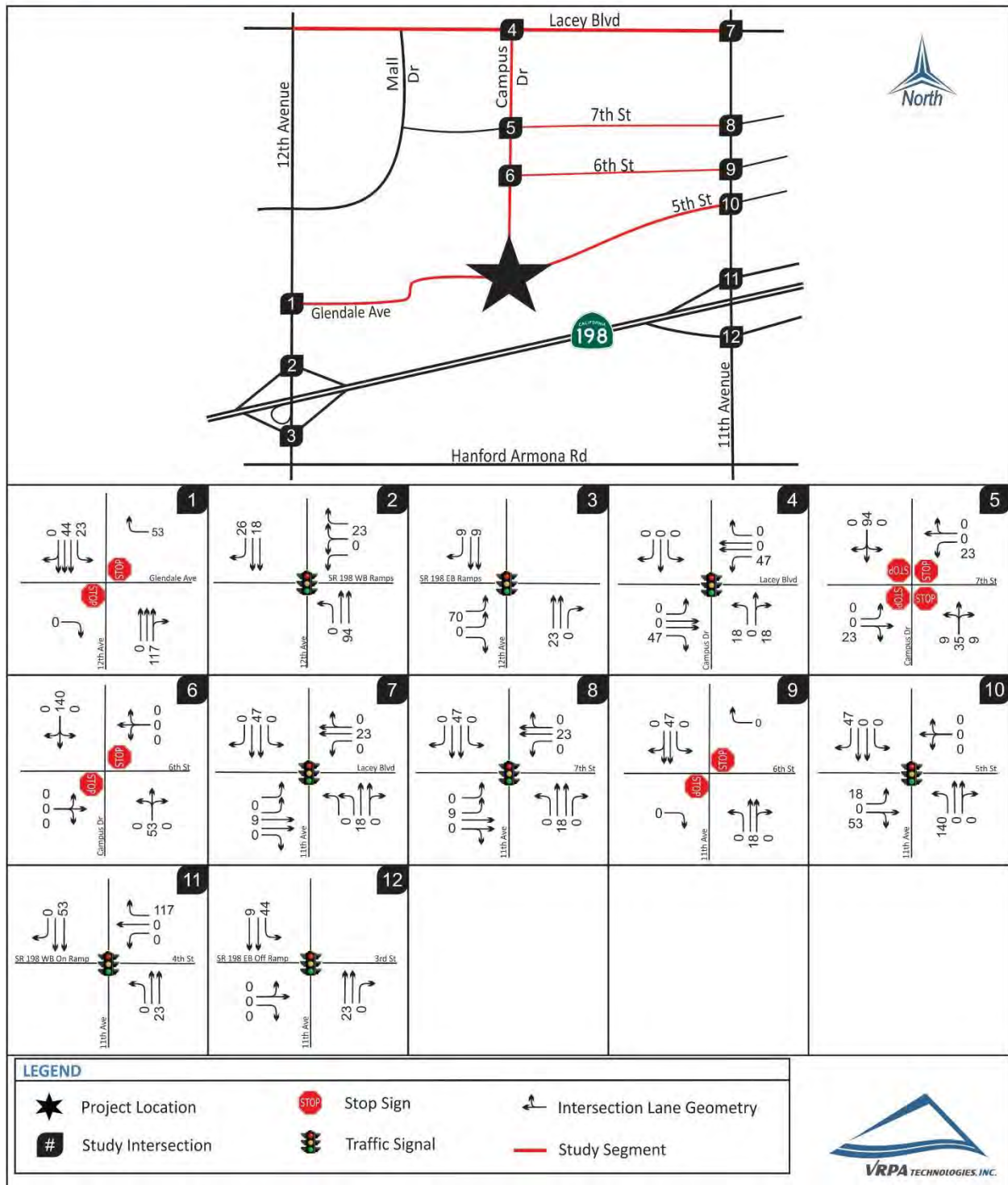
**Hanford Place Development**  
**Project Trip Distribution - Outbound**

**Figure**  
**3-1b**



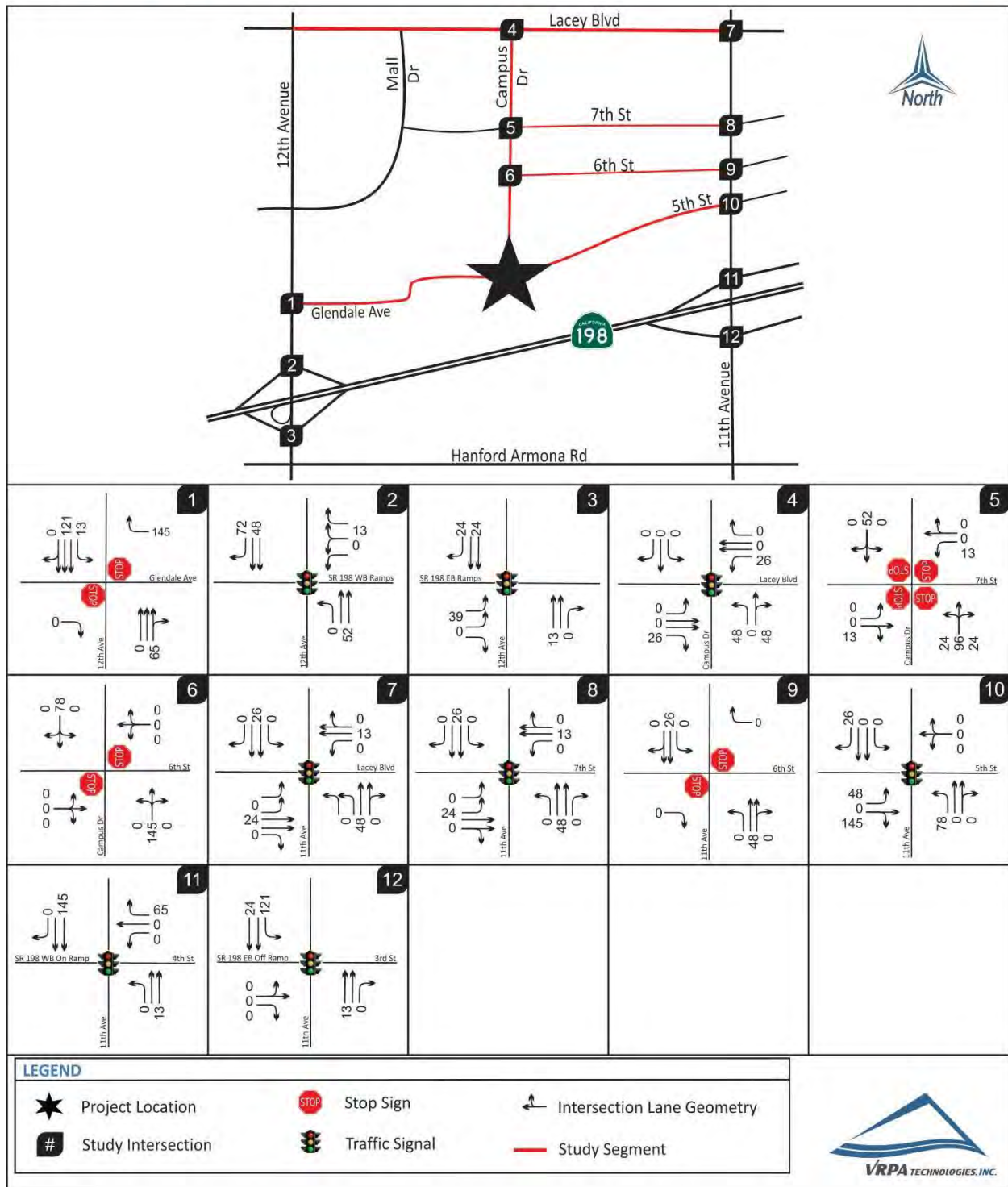
**Hanford Place Development**  
**AM Peak Hour Project Traffic**

**Figure**  
**3-2**



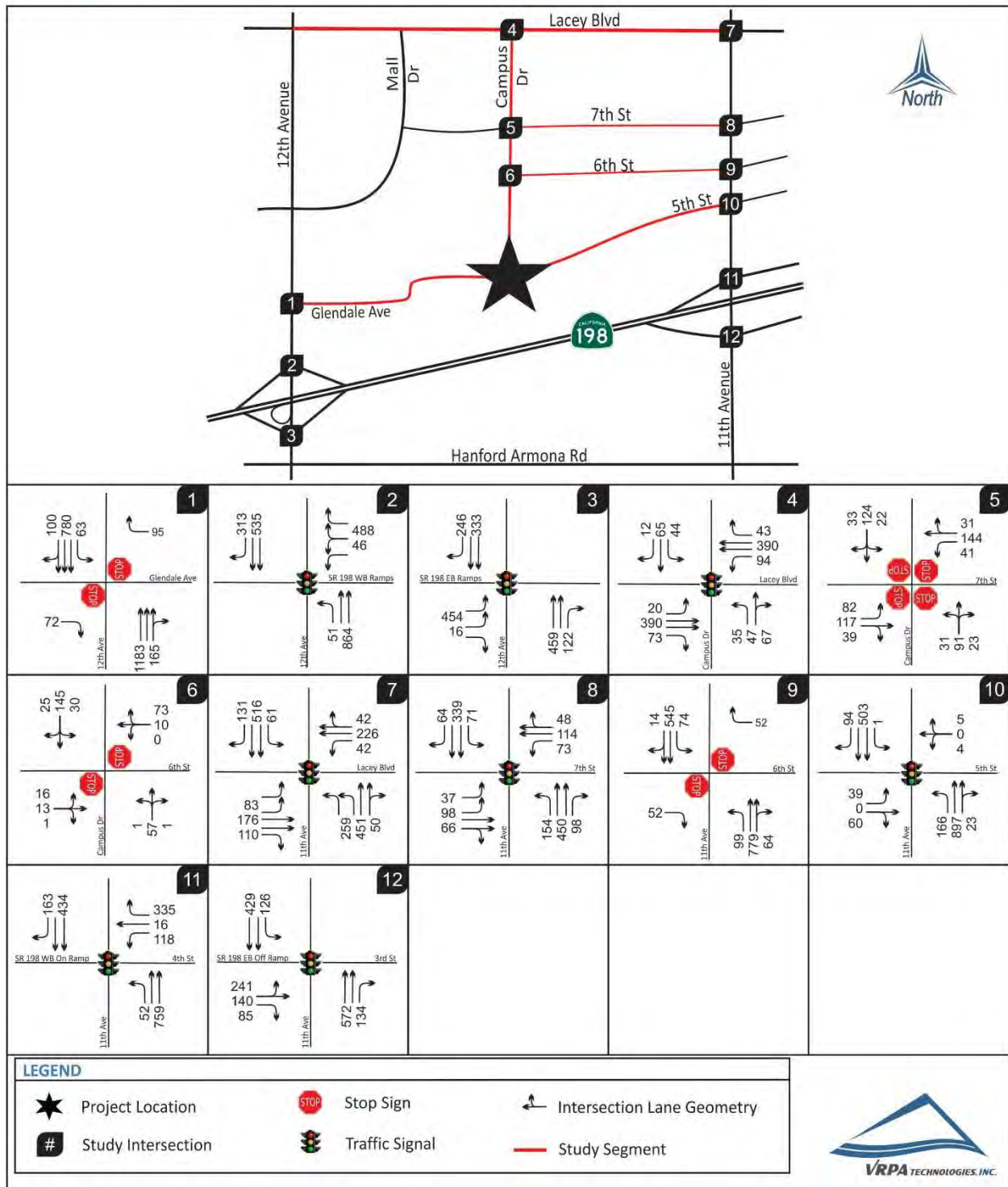
# Hanford Place Development PM Peak Hour Project Traffic

Figure  
3-3



**Hanford Place Development**  
**Existing Plus Project AM Peak Hour Traffic**

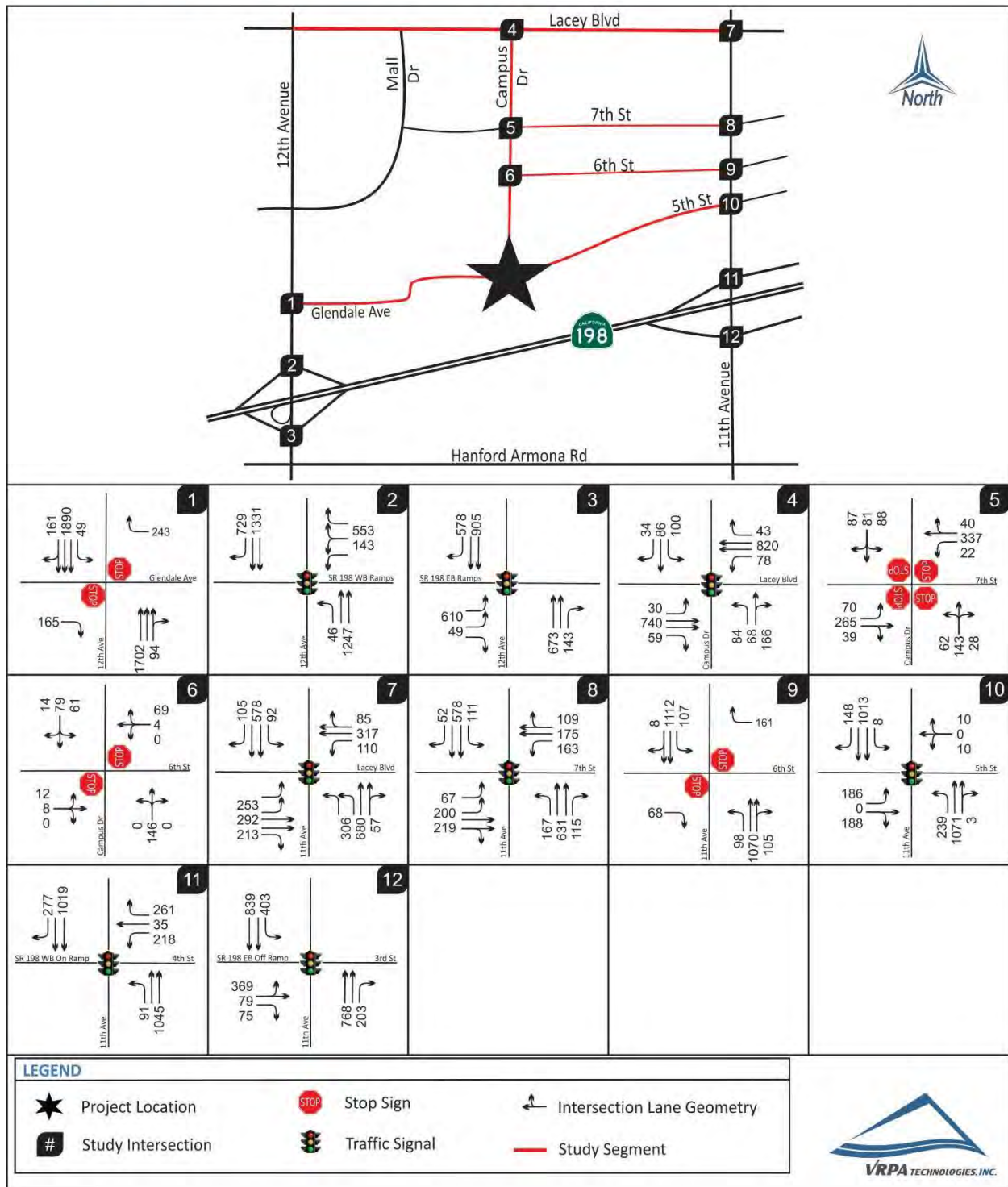
**Figure**  
**3-4**





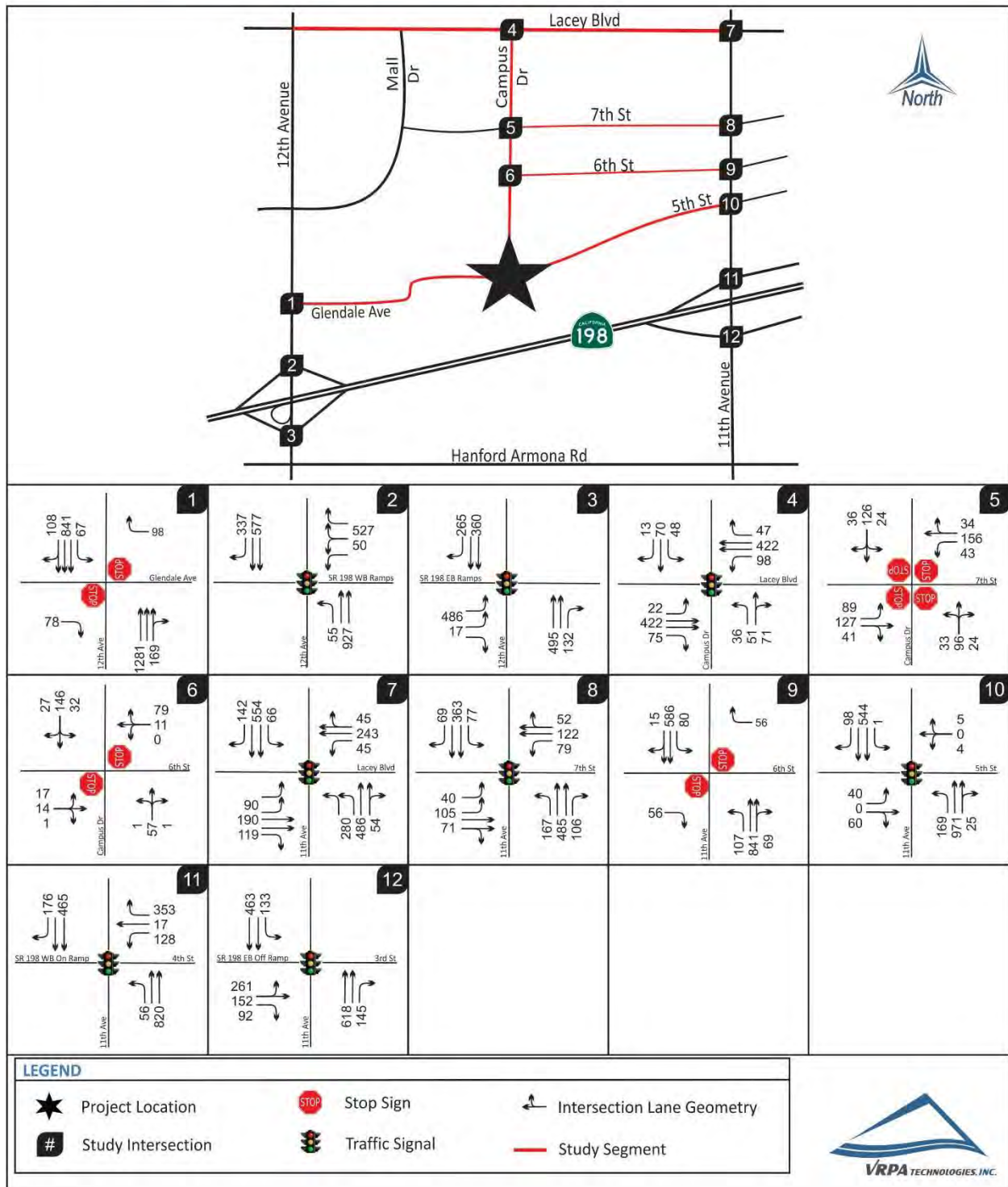
**Hanford Place Development**  
**Existing Plus Project PM Peak Hour Traffic**

**Figure**  
**3-5**



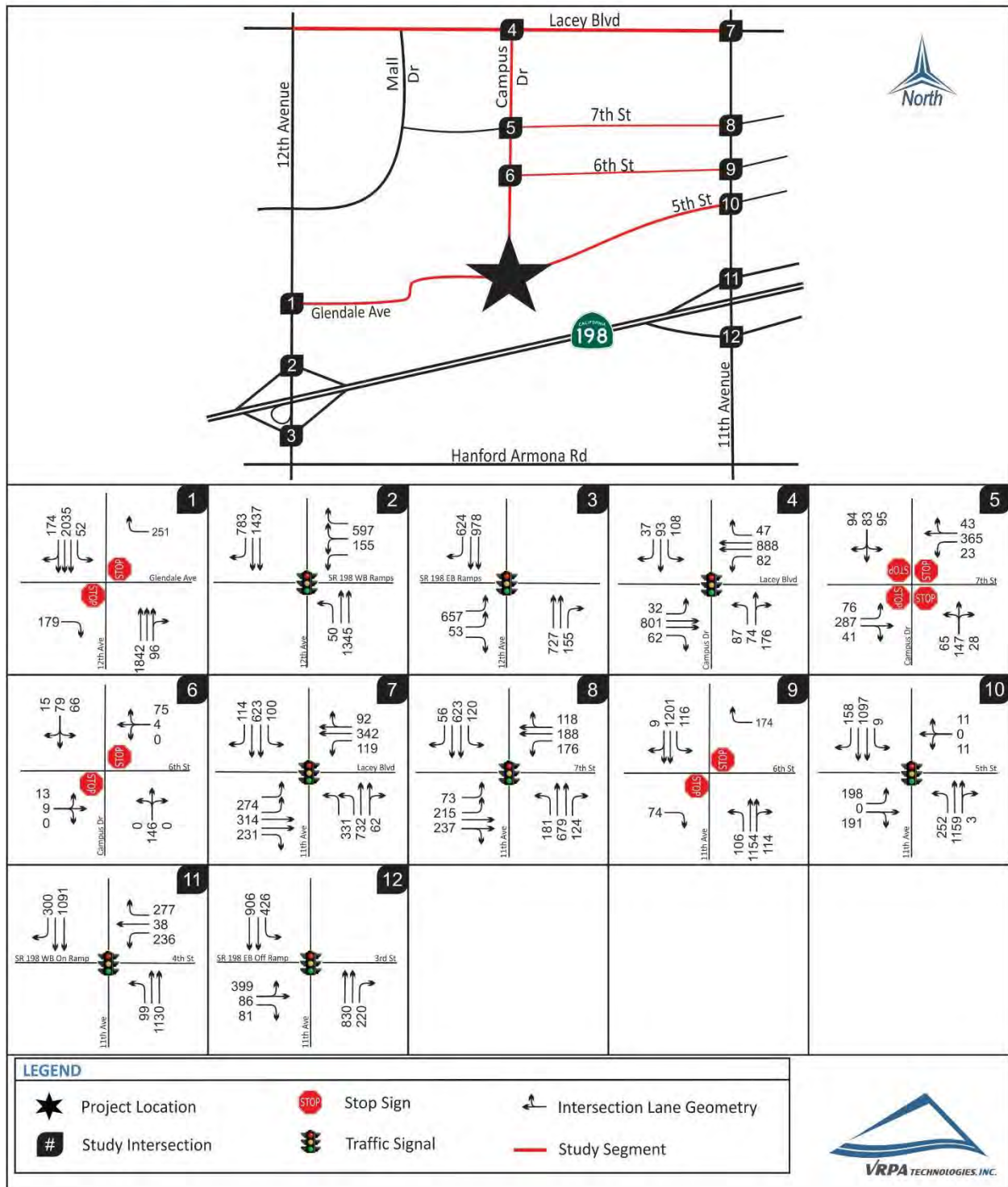
**Hanford Place Development**  
**Near-Term Plus Project AM Peak Hour Traffic**

**Figure**  
**3-6**



**Hanford Place Development**  
**Near-Term Plus Project PM Peak Hour Traffic**

**Figure**  
**3-7**





### 3.6 Cumulative Year 2042 Without Project Traffic Conditions

The impacts of the Project were analyzed considering future traffic conditions in the year 2042. The levels of traffic expected in 2042 relate to the cumulative effect of traffic increases resulting from the implementation of the General Plans of local agencies, including the City of Hanford and Kings County. Traffic conditions without the Project in the Year 2042 were estimated by applying a growth rate of 2% per year to the existing traffic volumes. A comparison of the KCAG base year and future year travel model showed that the growth in the study area is approximately 2% per year. The resulting traffic is shown in Figures 3-8 and 3-9.

### 3.7 Cumulative Year 2042 Plus Project Traffic Conditions

The addition of Project trips, as shown in Figures 3-2 and 3-3 (Section 3.3), were added to Cumulative Year 2042 Without Project traffic volumes. This leads to the results shown in Figures 3-10 and 3-11.

### 3.8 Impacts

#### 3.8.1 Intersection Capacity Analysis

Table 3-2 provides the intersection level of service analysis for the study intersections considering the study scenarios discussed above. Potential mitigation measures are discussed in Chapter 4 of this report. Results of the analysis show that the Project will contribute to an unacceptable LOS at five (5) of the study intersections when comparing the Cumulative Year 2042 scenarios.

#### 3.8.2 Queuing Analysis

Table 3-3 provides a queue length summary for left and right turn lanes at study intersections. The queuing analyses is based upon methodology presented in Chapter 400 of Caltrans' Highway Design Manual (HDM). The queue results shown in Table 3-3 represent the approximate queue lengths for the respective lane movements. Results of the queuing analysis show that several movements exceed the existing queue lane storage lengths.

#### 3.8.3 Roadway Segment Capacity Analysis

Table 3-4 shows roadway segments that are expected to fall short of desirable operating conditions for various scenarios. Potential mitigation measures are discussed in Chapter 4 of this report. Results of the analysis also show that the Project will result in a cumulative impact at two (2) of the study roadway segments when comparing the Cumulative Year 2042 scenarios.

### 3.9 VMT Analysis

Since the City of Hanford has not adopted methodologies or thresholds for VMT analyses related to SB 743, the VMT analysis was conducted using statewide guidance provided by the Governor's Office of Planning and Research (OPR) in their Technical Advisory on Evaluating Transportation Impacts in CEQA (OPR, December 2018). OPR recommends comparing project VMT/capita and VMT/employee to regional averages to determine the level of significance of project impacts. VMT/capita and VMT/employee values for the project as well as regional averaged were obtained from an online VMT analysis tool provided by the Kings County Association of Governments (KCAG).

For mixed-use projects (such as the proposed Project), OPR recommends analyzing the individual components of the project separately with respect to VMT analysis and taking a reduction for trips that are made within the project site that would have very low VMT values. Since VMT for internal trips is difficult to quantify, no reductions were taken leading to a somewhat conservative approach. OPR also allows for conducting the analysis of mixed-use projects based on the dominant land use if applicable. In the case of the proposed Project, none of the project components (residential, employment, or retail) is considered to be dominant.

The VMT analysis conducted for the residential, employment, and retail components of the project is described below:

- ✓ Residential: The project is located within two traffic analysis zones (TAZ's) of the Kings County Association of Governments (KCAG) model that have little or no existing residential development and therefore no data on which to form a VMT analysis based on these TAZ's. Instead, the VMT analysis was conducted based on the average VMT/capita of the five TAZ's adjacent to the project site. The resulting daily VMT/capita value is 6.562. For residential projects OPR recommends use of a threshold for VMT/capita 15% below either the regional or city average. Anything below either of these values would result in a less than significant impact. The regional average was used since the city average is not currently available from KCAG. Since the regional average daily VMT/capita is 9.562, the project VMT/capita of 6.56 is 31.7% below the regional average. Since this is more than 15% below the regional average, the residential component of the project has a less than significant transportation impact and no mitigation measures are needed.
- ✓ Employment: The project is located within two traffic analysis zones (TAZ's) of the Kings County Association of Governments (KCAG) model, each with a separate VMT/employee value. The project VMT/employee was calculated based on the average VMT/employee value for the two TAZ's. It should be noted that a larger portion of the project area falls within the TAZ that has a higher VMT/employee level of the two zones and the analysis is therefore somewhat conservative. The resulting daily VMT/capita value is 12.565. For employment projects OPR recommends use of a threshold for VMT/capita 15% below the

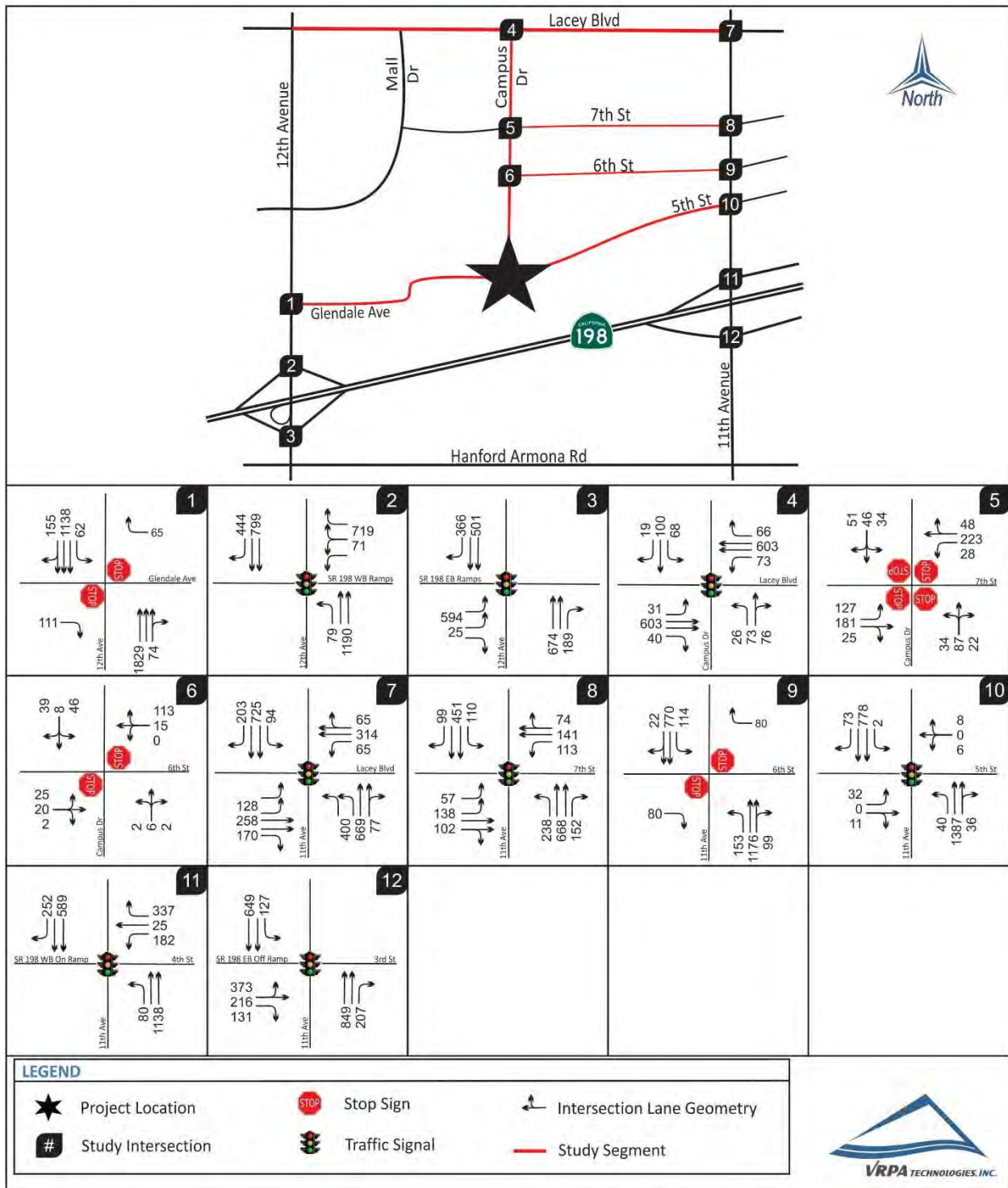
regional average. Anything below this value would result in a less than significant impact. The regional average was used since the city average is not currently available from KCAG. Since the regional average daily VMT/employee is 17.7, the project VMT/capita of 12.565 is 29.0% below the regional average. Since this is more than 15% below the regional average, the employment component of the project has a less than significant transportation impact and no mitigation measures are needed.

- ✓ Retail: For local-serving retail projects, such as the retail component of the proposed Project, OPR recommends that the transportation impact of the project be presumed to be less than significant. This is because local-serving retail developments will generally draw trips from the nearby area and will replace trips currently made to more distant retail locations. Therefore, the retail component of the project has a less than significant transportation impact and no mitigation measures are needed.

Copies of the VMT analysis maps used to conduct this analysis are included in Appendix F.

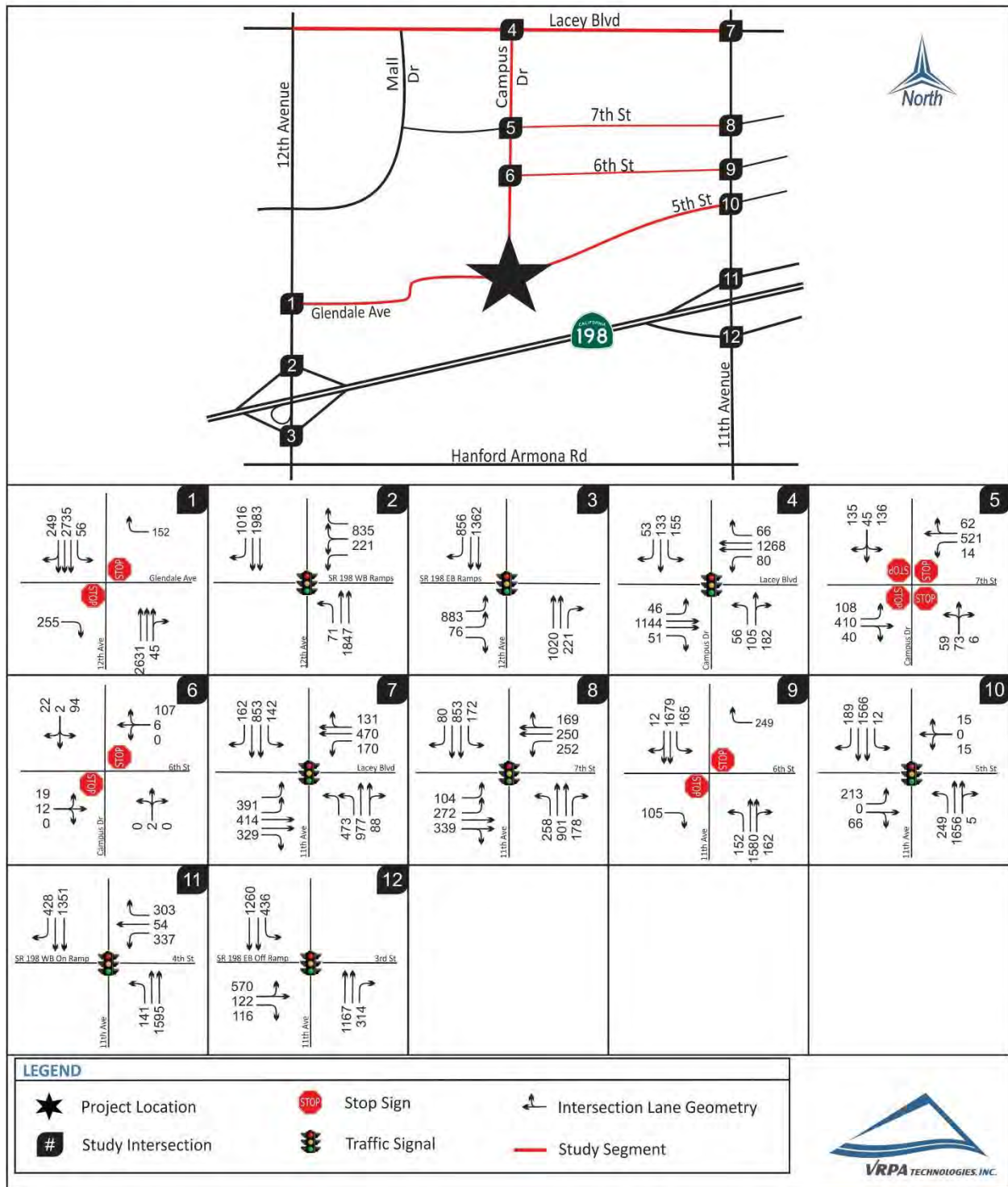
**Hanford Place Development**  
**Cumulative Year 2042 Without Project AM Peak Hour Traffic**

**Figure**  
**3-8**



**Hanford Place Development**  
**Cumulative Year 2042 Without Project PM Peak Hour Traffic**

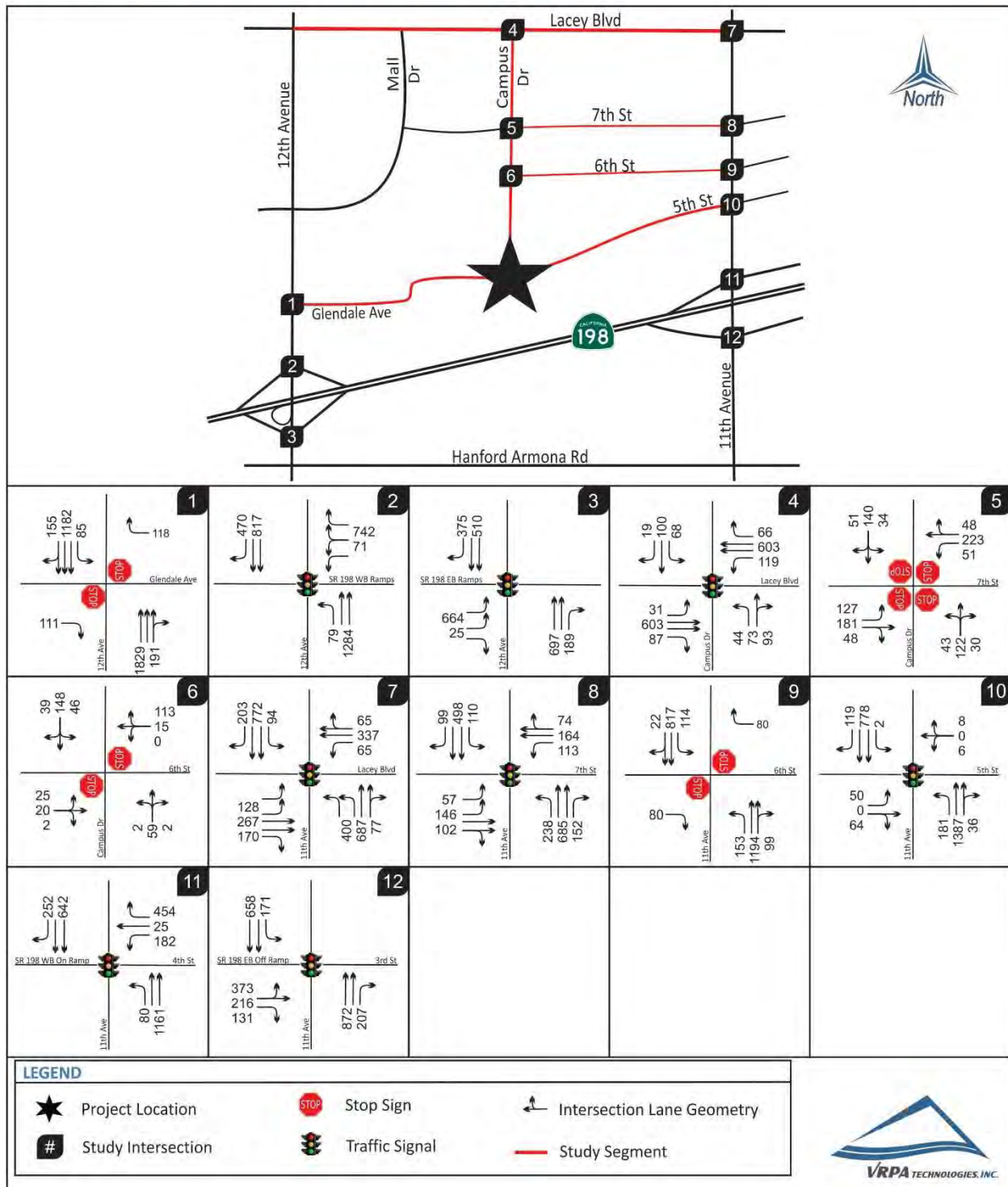
**Figure**  
**3-9**





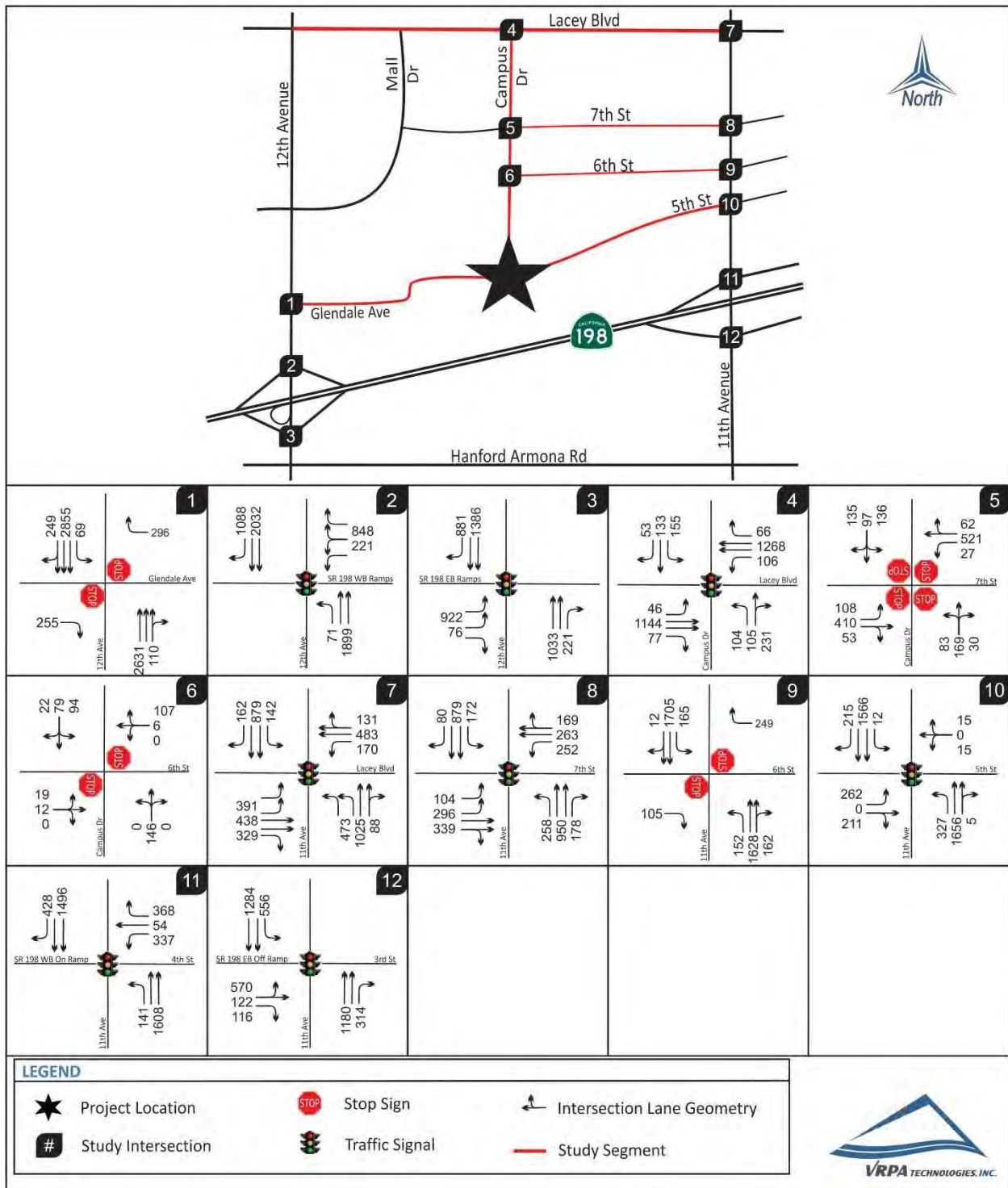
**Hanford Place Development**  
**Cumulative Year 2042 Plus Project AM Peak Hour Traffic**

**Figure**  
**3-10**



**Hanford Place Development**  
**Cumulative Year 2042 Plus Project PM Peak Hour Traffic**

**Figure**  
**3-11**





**Table 3-2**  
**Intersection Operations**

| INTERSECTION                                    | CONTROL           | TARGET LOS      | PEAK HOUR | EXISTING PLUS PROJECT |            | NEAR-TERM PLUS PROJECT |            | CUMULATIVE YEAR 2042 WITHOUT PROJECT |          | CUMULATIVE YEAR 2042 PLUS PROJECT |            |
|-------------------------------------------------|-------------------|-----------------|-----------|-----------------------|------------|------------------------|------------|--------------------------------------|----------|-----------------------------------|------------|
|                                                 |                   |                 |           | DELAY                 | LOS        | DELAY                  | LOS        | DELAY                                | LOS      | DELAY                             | LOS        |
| 1. 12th Avenue / Glendale Avenue                | Two-Way Stop Sign | D               | AM        | 30.2                  | D          | <b>37.2</b>            | <b>E</b>   | <b>74.4</b>                          | <b>F</b> | <b>154.4</b>                      | <b>F +</b> |
|                                                 |                   |                 | PM        | <b>184.6</b>          | <b>F +</b> | <b>269.9</b>           | <b>F +</b> | <b>++</b>                            | <b>F</b> | <b>++</b>                         | <b>F +</b> |
| 2. 12th Avenue / SR 198 WB Ramps                | Signalized        | -- <sup>1</sup> | AM        | 13.7                  | B          | 14.5                   | B          | 18.8                                 | B        | 19.9                              | B          |
|                                                 |                   |                 | PM        | 19.4                  | B          | 23.0                   | C          | 64.5                                 | E        | 75.1                              | E          |
| 3. 12th Avenue / SR 198 EB Ramps                | Signalized        | -- <sup>1</sup> | AM        | 12.5                  | B          | 12.7                   | B          | 13.2                                 | B        | 13.7                              | B          |
|                                                 |                   |                 | PM        | 13.6                  | B          | 14.3                   | B          | 19.0                                 | B        | 20.1                              | C          |
| 4. Campus Drive / Lacey Boulevard               | Signalized        | D               | AM        | 25.2                  | C          | 25.4                   | C          | 25.7                                 | C        | 25.5                              | C          |
|                                                 |                   |                 | PM        | 29.2                  | C          | 31.4                   | C          | 52.2                                 | D        | 52.9                              | D          |
| 5. Campus Drive / 7th Street                    | All-Way Stop Sign | D               | AM        | 11.9                  | B          | 12.6                   | B          | 12.1                                 | B        | 15.0                              | B          |
|                                                 |                   |                 | PM        | 23.7                  | C          | 31.8                   | D          | <b>92.9</b>                          | <b>F</b> | <b>146.9</b>                      | <b>F</b>   |
| 6. Campus Drive / 6th Street                    | Two-Way Stop Sign | D               | AM        | 13.3                  | B          | 13.6                   | B          | 10.7                                 | B        | 13.1                              | B          |
|                                                 |                   |                 | PM        | 13.9                  | B          | 14.3                   | B          | 11.5                                 | B        | 14.7                              | B          |
| 7. 11th Avenue / Lacey Boulevard                | Signalized        | D               | AM        | 20.3                  | C          | 21.0                   | C          | 25.3                                 | C        | 25.9                              | C          |
|                                                 |                   |                 | PM        | 28.5                  | C          | 31.6                   | C          | 49.9                                 | D        | 52.7                              | D          |
| 8. 11th Avenue / 7th Street                     | Signalized        | D               | AM        | 18.9                  | B          | 19.7                   | B          | 24.2                                 | C        | 24.4                              | C          |
|                                                 |                   |                 | PM        | 29.0                  | C          | 31.8                   | C          | <b>55.6</b>                          | <b>E</b> | <b>57.6</b>                       | <b>E</b>   |
| 9. 11th Avenue / 6th Street                     | Two-Way Stop Sign | D               | AM        | 12.7                  | B          | 13.3                   | B          | 17.1                                 | C        | 17.3                              | C          |
|                                                 |                   |                 | PM        | 18.1                  | C          | 20.6                   | C          | <b>74.3</b>                          | <b>F</b> | <b>83.6</b>                       | <b>F</b>   |
| 10. 11th Avenue / 5th Street                    | Signalized        | D               | AM        | 9.6                   | A          | 9.7                    | A          | 6.5                                  | A        | 10.7                              | B          |
|                                                 |                   |                 | PM        | 18.1                  | B          | 19.5                   | B          | 23.8                                 | C        | 42.3                              | D          |
| 11. 11th Avenue / 4th Street-SR 198 WB On Ramp  | Signalized        | -- <sup>1</sup> | AM        | 15.3                  | B          | 15.9                   | B          | 16.4                                 | B        | 20.8                              | C          |
|                                                 |                   |                 | PM        | 14.6                  | B          | 15.6                   | B          | 21.0                                 | C        | 28.4                              | C          |
| 12. 11th Avenue / 3rd Street-SR 198 EB Off Ramp | Signalized        | -- <sup>1</sup> | AM        | 21.0                  | C          | 22.9                   | C          | 27.0                                 | C        | 30.2                              | C          |
|                                                 |                   |                 | PM        | 30.6                  | C          | 35.4                   | D          | 76.3                                 | E        | 97.4                              | F          |

DELAY is measured in seconds

LOS = Level of Service / **BOLD** denotes LOS standard has been exceeded

For signalized and all-way stop intersections, delay results show the average for the entire intersection. For one-way and two-way stop controlled intersections, delay results show the delay for the worst movement.

1 - With the changes brought about by SB 743, Caltrans no longer uses level of service to determine the need for transportation improvements. Instead, focus is on providing adequate facilities for pedestrians, bicycles, and transit as well as safety considerations for all transportation modes. Guidance is provided in the Transportation Impact Study Guide dated May 20, 2020 and the Interim Land Development and Intergovernmental Review Safety Review Practitioners Guidance dated July 2020. This guidance will be used in determining the need for roadway improvements on Caltrans facilities.

+ Meets peak hour signal warrants.

++ Delay Exceeds 300 seconds.

**Table 3-3**  
**Queuing Operations**

| INTERSECTION                                | EXISTING QUEUE<br>STORAGE LENGTH (ft) |         | EXISTING PLUS<br>PROJECT |             | NEAR-TERM<br>PLUS PROJECT |             | CUMULATIVE YEAR<br>2042 WITHOUT<br>PROJECT |             | CUMULATIVE YEAR<br>2042 PLUS<br>PROJECT |             |
|---------------------------------------------|---------------------------------------|---------|--------------------------|-------------|---------------------------|-------------|--------------------------------------------|-------------|-----------------------------------------|-------------|
|                                             |                                       |         | AM<br>Queue              | PM<br>Queue | AM<br>Queue               | PM<br>Queue | AM<br>Queue                                | PM<br>Queue | AM<br>Queue                             | PM<br>Queue |
| 12th Avenue / Glendale Avenue               | SB Left                               | 125     | 53                       | 41          | 56                        | 43          | 52                                         | 47          | 71                                      | 58          |
| 12th Avenue / SR 198 WB Ramps               | NB Left                               | 400     | 43                       | 38          | 46                        | 42          | 66                                         | 59          | 66                                      | 59          |
|                                             | WB Approach                           | 3 @ 275 | 445                      | 580         | 481                       | 627         | 658                                        | <b>880</b>  | 678                                     | <b>891</b>  |
| 12th Avenue / SR 198 EB Ramps               | SB Right                              | 600     | 205                      | 482         | 221                       | 520         | 305                                        | <b>713</b>  | 313                                     | <b>734</b>  |
|                                             | EB Left                               | 2 @ 875 | 378                      | 508         | 405                       | 548         | 495                                        | 736         | 553                                     | 768         |
|                                             | EB Right                              | 850     | 13                       | 41          | 14                        | 44          | 21                                         | 63          | 21                                      | 63          |
| Campus Drive / Lacey Boulevard              | NB Left                               | 75      | 29                       | 70          | 30                        | 73          | 22                                         | 47          | 37                                      | <b>87</b>   |
|                                             | SB Left                               | 200     | 37                       | 83          | 40                        | 90          | 57                                         | 129         | 57                                      | 129         |
|                                             | SB Right                              | 100     | 10                       | 28          | 11                        | 31          | 16                                         | 44          | 16                                      | 44          |
|                                             | EB Left                               | 200     | 17                       | 25          | 18                        | 27          | 26                                         | 38          | 26                                      | 38          |
|                                             | EB Right                              | 100     | 61                       | 49          | 63                        | 52          | 33                                         | 43          | 73                                      | 64          |
|                                             | WB Left                               | 125     | 78                       | 65          | 82                        | 68          | 61                                         | 67          | 99                                      | 88          |
|                                             | WB Right                              | 100     | 36                       | 36          | 39                        | 39          | 55                                         | 55          | 55                                      | 55          |
| Campus Drive / 7th Street                   | EB Left                               | 100     | 68                       | 58          | 74                        | 63          | <b>106</b>                                 | 90          | <b>106</b>                              | 90          |
|                                             | WB Left                               | 100     | 34                       | 18          | 36                        | 19          | 23                                         | 12          | 43                                      | 23          |
| 11th Avenue / Lacey Boulevard               | NB Left                               | 2 @ 200 | 216                      | 255         | 233                       | 276         | 333                                        | 394         | 333                                     | 394         |
|                                             | SB Left                               | 150     | 51                       | 77          | 55                        | 83          | 78                                         | 118         | 78                                      | 118         |
|                                             | SB Right                              | 150     | 109                      | 88          | 118                       | 95          | <b>169</b>                                 | 135         | <b>169</b>                              | 135         |
|                                             | EB Left                               | 2 @ 125 | 69                       | 211         | 75                        | 228         | 107                                        | <b>326</b>  | 107                                     | <b>326</b>  |
|                                             | EB Right                              | 100     | 92                       | <b>178</b>  | 99                        | <b>193</b>  | <b>142</b>                                 | <b>274</b>  | <b>142</b>                              | <b>274</b>  |
|                                             | WB Left                               | 100     | 35                       | 92          | 38                        | 99          | 54                                         | <b>142</b>  | 54                                      | <b>142</b>  |
| 11th Avenue / 7th Street                    | NB Left                               | 125     | <b>128</b>               | <b>139</b>  | <b>139</b>                | <b>151</b>  | <b>198</b>                                 | <b>215</b>  | <b>198</b>                              | <b>215</b>  |
|                                             | NB Right                              | 100     | 82                       | 96          | 88                        | <b>103</b>  | <b>127</b>                                 | <b>148</b>  | <b>127</b>                              | <b>148</b>  |
|                                             | SB Left                               | 100     | 59                       | 93          | 64                        | <b>100</b>  | <b>92</b>                                  | <b>143</b>  | <b>92</b>                               | <b>143</b>  |
|                                             | SB Right                              | 100     | 53                       | 43          | 58                        | 47          | 83                                         | 67          | 83                                      | 67          |
|                                             | EB Left                               | 2 @ 75  | 31                       | 56          | 33                        | 61          | 48                                         | 87          | 48                                      | 87          |
|                                             | WB Left                               | 125     | 61                       | <b>136</b>  | 66                        | <b>147</b>  | 94                                         | <b>210</b>  | 94                                      | <b>210</b>  |
| 11th Avenue / 6th Street                    | NB Left                               | 75      | <b>83</b>                | <b>82</b>   | <b>89</b>                 | <b>88</b>   | <b>128</b>                                 | <b>127</b>  | <b>128</b>                              | <b>127</b>  |
|                                             | SB Left                               | 125     | 62                       | 89          | 67                        | 97          | 95                                         | <b>138</b>  | 95                                      | <b>138</b>  |
| 11th Avenue / 5th Street                    | NB Left                               | 150     | 138                      | <b>199</b>  | 141                       | <b>210</b>  | 33                                         | <b>208</b>  | 151                                     | <b>273</b>  |
|                                             | SB Left                               | 50      | 1                        | 7           | 1                         | 8           | 2                                          | 10          | 2                                       | 10          |
|                                             | SB Right                              | 50      | <b>78</b>                | <b>123</b>  | <b>82</b>                 | <b>132</b>  | <b>61</b>                                  | <b>158</b>  | <b>99</b>                               | <b>179</b>  |
|                                             | EB Left                               | 50      | 33                       | <b>155</b>  | 33                        | <b>165</b>  | 27                                         | <b>178</b>  | 42                                      | <b>218</b>  |
| 11th Avenue / 4th Street-SR 198 WB On Ramp  | NB Left                               | 75      | 43                       | 76          | 47                        | <b>83</b>   | 67                                         | <b>118</b>  | 67                                      | <b>118</b>  |
|                                             | SB Right                              | 75      | <b>136</b>               | <b>231</b>  | <b>147</b>                | <b>250</b>  | <b>210</b>                                 | <b>357</b>  | <b>210</b>                              | <b>357</b>  |
|                                             | WB Left                               | 125     | 98                       | <b>182</b>  | 107                       | <b>197</b>  | <b>152</b>                                 | <b>281</b>  | <b>152</b>                              | <b>281</b>  |
| 11th Avenue / 3rd Street-SR 198 EB Off Ramp | NB Right                              | 75      | <b>112</b>               | <b>169</b>  | <b>121</b>                | <b>183</b>  | <b>173</b>                                 | <b>262</b>  | <b>173</b>                              | <b>262</b>  |
|                                             | SB Left                               | 150     | 105                      | <b>336</b>  | 111                       | <b>355</b>  | 106                                        | <b>363</b>  | 143                                     | <b>463</b>  |
|                                             | EB Right                              | 25      | <b>71</b>                | <b>63</b>   | <b>77</b>                 | <b>68</b>   | <b>109</b>                                 | <b>97</b>   | <b>109</b>                              | <b>97</b>   |

Queue is measured in feet / **BOLD** denotes exceedance

**Table 3-4**  
**Segment Operations**

| STREET SEGMENT                      | SEGMENT DESCRIPTION | TARGET LOS | PEAK HOUR | EXISTING PLUS PROJECT |     | NEAR-TERM PLUS PROJECT |     | CUMULATIVE YEAR 2042 WITHOUT PROJECT |     | CUMULATIVE YEAR 2042 PLUS PROJECT |     |
|-------------------------------------|---------------------|------------|-----------|-----------------------|-----|------------------------|-----|--------------------------------------|-----|-----------------------------------|-----|
|                                     |                     |            |           | VOLUME                | LOS | VOLUME                 | LOS | VOLUME                               | LOS | VOLUME                            | LOS |
| Lacey Boulevard                     |                     |            |           |                       |     |                        |     |                                      |     |                                   |     |
| 12th Avenue to Campus Drive         | 4 Lanes Divided     | D          | AM        | 919                   | C   | 990                    | C   | 1,322                                | C   | 1,386                             | C   |
|                                     |                     |            | PM        | 1,767                 | C   | 1,907                  | C   | 2,617                                | D   | 2,691                             | D   |
| Campus Drive to 11th Avenue         | 4 Lanes Divided     | D          | AM        | 1,027                 | C   | 1,107                  | C   | 1,489                                | C   | 1,553                             | C   |
|                                     |                     |            | PM        | 1,947                 | C   | 2,101                  | C   | 2,896                                | D   | 2,970                             | E   |
| 7th Street                          |                     |            |           |                       |     |                        |     |                                      |     |                                   |     |
| Campus Drive to 11th Avenue         | 2 Lanes Undivided   | D          | AM        | 378                   | D   | 407                    | D   | 535                                  | D   | 567                               | D   |
|                                     |                     |            | PM        | 780                   | D   | 841                    | D   | 1,149                                | E   | 1,186                             | E   |
| 6th Street                          |                     |            |           |                       |     |                        |     |                                      |     |                                   |     |
| Campus Drive to 11th Avenue         | 2 Lanes Undivided   | D          | AM        | 127                   | C   | 137                    | C   | 196                                  | C   | 196                               | C   |
|                                     |                     |            | PM        | 142                   | C   | 154                    | C   | 220                                  | C   | 220                               | C   |
| Glendale Avenue                     |                     |            |           |                       |     |                        |     |                                      |     |                                   |     |
| East of 12th Avenue                 | 2 Lanes Undivided   | D          | AM        | 323                   | C   | 334                    | D   | 201                                  | C   | 394                               | D   |
|                                     |                     |            | PM        | 385                   | D   | 399                    | D   | 252                                  | C   | 474                               | D   |
| 5th Avenue                          |                     |            |           |                       |     |                        |     |                                      |     |                                   |     |
| West of 11th Avenue                 | 2 Lanes Undivided   | D          | AM        | 359                   | D   | 367                    | D   | 156                                  | C   | 414                               | D   |
|                                     |                     |            | PM        | 760                   | D   | 799                    | D   | 717                                  | D   | 1,014                             | D   |
| Campus Drive                        |                     |            |           |                       |     |                        |     |                                      |     |                                   |     |
| Lacey Bouloevard to Glendale Avenue | 2 Lanes Undivided   | D          | AM        | 380                   | D   | 400                    | D   | 388                                  | D   | 517                               | D   |
|                                     |                     |            | PM        | 541                   | D   | 574                    | D   | 608                                  | D   | 756                               | D   |

LOS = Level of Service / **BOLD** denotes LOS standard has been exceeded

## 4.0 Mitigation

As discussed in Section 3.0 Impacts, the potentially significant impacts resulting from the Project relate to the generation of unacceptable LOS at various intersections and road segments in the long term. Considering the criteria provided in Section 1.3 and the results presented in Section 3.0, the following improvements are recommended to alleviate project-specific impacts.

### 4.1 Recommended Improvements

#### 4.1.1 Intersections

- ✓ 12<sup>th</sup> Avenue at Glendale Avenue  
*No Recommended improvements.*

Installation of a traffic signal would alleviate level of service deficiencies at the intersection for all study scenarios. However, providing a traffic signal at this location is not practical given the close spacing of adjacent intersections. In lieu of the traffic signal, dual right turn lanes for the eastbound and westbound approaches to the intersection should be considered to alleviate queuing at the eastbound and westbound approaches.

- ✓ Campus Drive at 7<sup>th</sup> Street  
*Recommended improvements to achieve acceptable levels of service:*
  - Cumulative Year 2042 Plus Project scenario:
    - Install Traffic Signal

The improvements identified above for the Cumulative Year 2042 Plus Project scenario are sufficient to meet the City of Hanford's acceptable LOS standard of 'D'.

- ✓ 11<sup>th</sup> Avenue at 7<sup>th</sup> Street  
*No Recommended improvements.*

Providing additional turning movement lanes along 11<sup>th</sup> Avenue and 7<sup>th</sup> Street is not possible due to design constraints or infeasible/impractical due to the presence of commercial development that currently exists along the north and south side of 7<sup>th</sup> Street.

- ✓ 11<sup>th</sup> Avenue at 6<sup>th</sup> Street  
*No Recommended improvements.*

This intersection is forecasted to operate at unacceptable LOS 'F' (PM) under Cumulative Year 2042 Without Project and Cumulative Year 2042 Plus Project conditions; however, this intersection does not meet the peak hour traffic signal warrant because the minor approaches do not carry enough traffic to justify signalization. Therefore, no improvements

are recommended for the Project's contribution of traffic at the intersection for the Cumulative Year 2042 Plus Project condition.

- ✓ 12<sup>th</sup> Avenue at SR 198 WB Ramps  
*No Recommended improvements.*

Providing additional turning movement lanes at the 12<sup>th</sup> Avenue and SR 198 WB Ramps intersection is not possible due to design constraints or infeasible/impractical due to the presence of development that currently exists along the north side of the SR 198 WB Ramps. As noted in Section 1.3, Caltrans no longer uses level of service to determine the need for transportation improvements. Instead, focus is on providing adequate facilities for pedestrians, bicycles, and transit as well as safety considerations for all transportation modes.

- ✓ 11<sup>th</sup> Avenue at 3<sup>rd</sup> Street-SR 198 EB Off Ramp  
*No Recommended improvements.*

Providing additional turning movement lanes at the 11<sup>th</sup> Avenue and 3<sup>rd</sup> Street-SR 198 EB Off Ramp intersection is not possible due to design constraints or infeasible/impractical due to the presence of development that currently exists along the south side of 3<sup>rd</sup> Street and the SR 198 EB Off Ramp. As noted in Section 1.3, Caltrans no longer uses level of service to determine the need for transportation improvements. Instead, focus is on providing adequate facilities for pedestrians, bicycles, and transit as well as safety considerations for all transportation modes.

#### 4.1.2 Roadway Segments

- ✓ Lacey Boulevard between Campus Drive and 11<sup>th</sup> Avenue  
*No Recommended improvements.*

Providing additional travel lanes along Lacey Boulevard is not possible due to design constraints or infeasible/impractical due to the presence of retail development that currently exists along the north and south side of Lacey Boulevard. In addition, accommodating additional travel lanes along Lacey Boulevard could result in the elimination of parking along Lacey Boulevard.

- ✓ 7<sup>th</sup> Street between Campus Drive and 11<sup>th</sup> Avenue  
*Recommended improvements:*

- Cumulative Year 2042 Plus Project scenario:
  - Restripe to provide two-way left turn lane with removal of parking as necessary

Providing additional travel lanes along 7<sup>th</sup> Street is not possible due to right-of-way constraints.

## Post-Mitigation Level of Significance

The level of service resulting from the potential improvements identified above is shown in Tables 4-1 and 4-2. Table 4-3 identifies left turn and right turn lane pocket lengths required for the Cumulative Year 2042 scenario. Although the need for extended turn lane pockets would occur at some locations prior to the Cumulative Year 2042 scenario, this scenario provides the maximum length needed and therefore these lengths would also provide for projected traffic volumes under the Existing Plus Project and Near-Term Plus Project scenarios. The left turn and right turn pocket length do not include deceleration lengths.

**Table 4-1**  
**Intersection Operations with Mitigation**

| INTERSECTION                                    | CONTROL           | TARGET LOS      | PEAK HOUR | EXISTING PLUS PROJECT |                | NEAR-TERM PLUS PROJECT |                | CUMULATIVE YEAR 2042 PLUS PROJECT |                |
|-------------------------------------------------|-------------------|-----------------|-----------|-----------------------|----------------|------------------------|----------------|-----------------------------------|----------------|
|                                                 |                   |                 |           | DELAY                 | LOS            | DELAY                  | LOS            | DELAY                             | LOS            |
| 1. 12th Avenue / Glendale Avenue                | Two-Way Stop Sign | D               | AM        | 30.2                  | D              | 37.2                   | E <sup>2</sup> | 154.4                             | F <sup>2</sup> |
|                                                 |                   |                 | PM        | 184.6                 | F <sup>2</sup> | 269.9                  | F <sup>2</sup> | ++                                | F <sup>2</sup> |
| 2. 12th Avenue / SR 198 WB Ramps                | Signalized        | -- <sup>1</sup> | AM        |                       |                |                        |                | 19.9                              | B              |
|                                                 |                   |                 | PM        |                       |                |                        |                | 75.1                              | E <sup>3</sup> |
| 5. Campus Drive / 7th Street                    | Signalized        | D               | AM        |                       |                |                        |                | 12.8                              | B              |
|                                                 |                   |                 | PM        |                       |                |                        |                | 20.4                              | C              |
| 8. 11th Avenue / 7th Street                     | Signalized        | D               | AM        |                       |                |                        |                | 24.4                              | C              |
|                                                 |                   |                 | PM        |                       |                |                        |                | 57.6                              | E <sup>3</sup> |
| 9. 11th Avenue / 6th Street                     | Two-Way Stop Sign | D               | AM        |                       |                |                        |                | 17.3                              | C              |
|                                                 |                   |                 | PM        |                       |                |                        |                | 83.6                              | F <sup>4</sup> |
| 12. 11th Avenue / 3rd Street-SR 198 EB Off Ramp | Signalized        | -- <sup>1</sup> | AM        |                       |                |                        |                | 30.2                              | C              |
|                                                 |                   |                 | PM        |                       |                |                        |                | 97.4                              | F <sup>3</sup> |

DELAY is measured in seconds

LOS = Level of Service / **BOLD** denotes LOS standard has been exceeded

For signalized and all-way stop intersections, delay results show the average for the entire intersection. For one-way and two-way stop controlled intersections, delay results show the delay for the worst movement.

1 - With the changes brought about by SB 743, Caltrans no longer uses level of service to determine the need for transportation improvements. Instead, focus is on providing adequate facilities for pedestrians, bicycles, and transit as well as safety considerations for all transportation modes. Guidance is provided in the Transportation Impact Study Guide dated May 20, 2020 and the Interim Land Development and Intergovernmental Review Safety Review Practitioners Guidance dated July 2020. This guidance will be used in determining the need for roadway improvements on Caltrans facilities.

2 Installation of a traffic signal would alleviate LOS deficiencies at the intersection. A traffic signal is not recommended given the close spacing of adjacent intersections.

3 Improvements to the intersection aren't recommended given the presence of abutting commercial development at the intersection.

4 Intersection does not meet the peak hour traffic signal warrant.

++ Delay Exceeds 300 seconds.

**Table 4-2**  
**Segment Operations with Mitigation**

| STREET SEGMENT              | TARGET LOS | PEAK HOUR | CUMULATIVE<br>YEAR 2042<br>PLUS PROJECT |     |
|-----------------------------|------------|-----------|-----------------------------------------|-----|
|                             |            |           | VOLUME                                  | LOS |
| Lacey Boulevard             |            |           |                                         |     |
| Campus Drive to 11th Avenue | D          | AM        | 1,553                                   | C   |
|                             |            | PM        | 2,970                                   | E * |
| 7th Street                  |            |           |                                         |     |
| Campus Drive to 11th Avenue | D          | AM        | 567                                     | D   |
|                             |            | PM        | 1,186                                   | E * |

\* Capacity Increasing Improvements to the roadway segment aren't recommended given the presence of abutting commercial development.



**Table 4-3**  
**Left Turn and Right Turn Storage Requirements**

| INTERSECTION                                | EXISTING QUEUE STORAGE LENGTH (ft) |         | CUMULATIVE YEAR 2042 PLUS PROJECT RECOMMENDED STORAGE LENGTH (ft) |
|---------------------------------------------|------------------------------------|---------|-------------------------------------------------------------------|
|                                             |                                    |         |                                                                   |
| 12th Avenue / Glendale Avenue               | SB Left                            | 125     | 125                                                               |
| 12th Avenue / SR 198 WB Ramps               | NB Left                            | 400     | 400                                                               |
|                                             | WB Approach                        | 3 @ 275 | <b>3 @ 300</b>                                                    |
| 12th Avenue / SR 198 EB Ramps               | SB Right                           | 600     | 600                                                               |
|                                             | EB Left                            | 2 @ 875 | 2 @ 875                                                           |
|                                             | EB Right                           | 850     | 850                                                               |
| Campus Drive / Lacey Boulevard              | NB Left                            | 75      | 100                                                               |
|                                             | SB Left                            | 200     | 200                                                               |
|                                             | SB Right                           | 100     | 100                                                               |
|                                             | EB Left                            | 200     | 200                                                               |
|                                             | EB Right                           | 100     | 100                                                               |
|                                             | WB Left                            | 125     | 125                                                               |
|                                             | WB Right                           | 100     | 100                                                               |
| Campus Drive / 7th Street                   | EB Left                            | 100     | 100                                                               |
|                                             | WB Left                            | 100     | 100                                                               |
| 11th Avenue / Lacey Boulevard               | NB Left                            | 2 @ 200 | 2 @ 200                                                           |
|                                             | SB Left                            | 150     | 150                                                               |
|                                             | SB Right                           | 150     | <b>175</b>                                                        |
|                                             | EB Left                            | 2 @ 125 | 2 @ 125                                                           |
|                                             | EB Right                           | 100     | 100                                                               |
|                                             | WB Left                            | 100     | 100                                                               |
| 11th Avenue / 7th Street                    | NB Left                            | 125     | 125                                                               |
|                                             | NB Right                           | 100     | 100                                                               |
|                                             | SB Left                            | 100     | 100                                                               |
|                                             | SB Right                           | 100     | 100                                                               |
|                                             | EB Left                            | 2 @ 75  | 2 @ 75                                                            |
|                                             | WB Left                            | 125     | 125                                                               |
| 11th Avenue / 6th Street                    | NB Left                            | 75      | 75                                                                |
|                                             | SB Left                            | 125     | 125                                                               |
| 11th Avenue / 5th Street                    | NB Left                            | 150     | <b>250</b>                                                        |
|                                             | SB Left                            | 50      | 50                                                                |
|                                             | SB Right                           | 50      | 50                                                                |
|                                             | EB Left                            | 50      | <b>225</b>                                                        |
| 11th Avenue / 4th Street-SR 198 WB On Ramp  | NB Left                            | 75      | 75                                                                |
|                                             | SB Right                           | 75      | 75                                                                |
|                                             | WB Left                            | 125     | 125                                                               |
| 11th Avenue / 3rd Street-SR 198 EB Off Ramp | NB Right                           | 75      | 75                                                                |
|                                             | SB Left                            | 150     | 150                                                               |
|                                             | EB Left                            | --      | <b>2 @ 250</b>                                                    |
|                                             | EB Right                           | 25      | 25                                                                |

**BOLD** denotes change in storage length

## 4.2 Equitable Share Responsibility

This section documents the Project's fair-share responsibility towards the costs of improvements that are identified for the Cumulative Year 2042 scenario. The intent of determining the equitable responsibility for the improvements identified above for the Cumulative Year 2042 scenario, is to provide information for the applicant and the City of Hanford to address traffic mitigation equitability and to calculate the equitable share for mitigating traffic impacts. The formulas used to calculate the equitable share responsibility to City of Hanford facilities is as follows:

$$\text{Equitable Share} = (\text{Project Trips}) / (\text{Future Year Plus Project Traffic})$$

Table 4-4 shows the Project's equitable fair share responsibility on a percentage basis for improvements to City of Hanford facilities as described above. The equitable fair share responsibility shown in Table 4-4 is the result of LOS enhancements related to capacity.

**Table 4-4**  
**Cumulative Year 2042 Equitable Share Responsibility**

| INTERSECTION                                    | PEAK HOUR | PROJECT TRIPS | CUMULATIVE YEAR 2042 PLUS PROJECT | FAIR SHARE PERCENTAGE |
|-------------------------------------------------|-----------|---------------|-----------------------------------|-----------------------|
| Campus Drive / 7th Street                       | AM        | 193           | 1,098                             | 17.6%                 |
|                                                 | PM        | 223           | 1,830                             | 12.2%                 |
| ROADWAY SEGMENT                                 |           |               |                                   |                       |
| 7th Street between Campus Drive and 11th Avenue | AM        | 32            | 567                               | 5.6%                  |
|                                                 | PM        | 37            | 1,186                             | 3.1%                  |

Based on a review of the information provided in this section and the remainder of the traffic impact study, the City of Hanford and the applicant have determined that the payment of the City's impact fees will satisfy the Project's obligations to pay for an equitable share of the improvements.

# **APPENDIX A**

## Modified Arterial Level of Service Tables

TABLE 4

Generalized **Peak Hour Two-Way** Volumes for Florida's  
Urbanized Areas<sup>1</sup>

03/14/2018

03/27/2025

| INTERRUPTED FLOW FACILITIES                                                                                                           |           |                      |                       |                    |       | UNINTERRUPTED FLOW FACILITIES |        |        |          |        |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------|-----------------------|--------------------|-------|-------------------------------|--------|--------|----------|--------|--|--|
| STATE SIGNALIZED ARTERIALS                                                                                                            |           |                      |                       |                    |       | FREEWAYS                      |        |        |          |        |  |  |
| Principal (1 signal per half mile)                                                                                                    |           |                      |                       |                    |       | Lanes                         | B      | C      | D        | E      |  |  |
| Lanes                                                                                                                                 | Median    | B                    | C                     | D                  | E     | 4                             | 4,560  | 6,200  | 7,690    | 7,870  |  |  |
| 2                                                                                                                                     | Undivided | *                    | 360                   | 1,250              | 1,690 | 6                             | 6,650  | 9,150  | 11,350   | 11,820 |  |  |
| 4                                                                                                                                     | Divided   | 90                   | 2,450                 | 3,250              | 3,400 | 8                             | 8,760  | 12,130 | 15,110   | 15,760 |  |  |
| 6                                                                                                                                     | Divided   | 150                  | 3,710                 | 4,890              | 5,130 | 10                            | 11,960 | 16,800 | 19,710   | **     |  |  |
|                                                                                                                                       |           |                      |                       |                    |       | 12                            | 14,820 | 19,980 | 23,640   | **     |  |  |
| Minor (1 signal per quarter mile)                                                                                                     |           |                      |                       |                    |       | Freeway Adjustments           |        |        |          |        |  |  |
| Lanes                                                                                                                                 | Median    | B                    | C                     | D                  | E     | Auxiliary Lanes               |        |        | Ramp     |        |  |  |
| 2                                                                                                                                     | Undivided | *                    | *                     | 380                | 1,290 | Present in Both Directions    |        |        | Metering |        |  |  |
| 4                                                                                                                                     | Divided   | *                    | 850                   | 2,530              | 3,350 | + 1,800                       |        |        | + 5%     |        |  |  |
| 6                                                                                                                                     | Divided   | *                    | 1,600                 | 3,980              | 5,050 |                               |        |        |          |        |  |  |
| Non-State Signalized Roadway Adjustments                                                                                              |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
| (Alter corresponding state volumes by the indicated percent.)                                                                         |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
| Non-State Signalized Roadways - 10%                                                                                                   |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
| Median & Turn Lane Adjustments                                                                                                        |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
| Lanes                                                                                                                                 | Median    | Exclusive Left Lanes | Exclusive Right Lanes | Adjustment Factors |       |                               |        |        |          |        |  |  |
| 2                                                                                                                                     | Divided   | Yes                  | No                    | +5%                |       |                               |        |        |          |        |  |  |
| 2                                                                                                                                     | Undivided | No                   | No                    | -20%               |       |                               |        |        |          |        |  |  |
| Multi                                                                                                                                 | Undivided | Yes                  | No                    | -5%                |       |                               |        |        |          |        |  |  |
| Multi                                                                                                                                 | Undivided | No                   | No                    | -25%               |       |                               |        |        |          |        |  |  |
| —                                                                                                                                     | —         | —                    | Yes                   | + 5%               |       |                               |        |        |          |        |  |  |
| One-Way Facility Adjustment                                                                                                           |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
| Multiply the corresponding two-directional volumes in this table by 0.6                                                               |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
| BICYCLE MODE <sup>2</sup>                                                                                                             |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
| (Multiply motorized vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.) |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
| Paved Shoulder/Bicycle                                                                                                                |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
| Lane Coverage                                                                                                                         | B         | C                    | D                     | E                  |       |                               |        |        |          |        |  |  |
| 0-49%                                                                                                                                 | *         | 260                  | 680                   | 1,770              |       |                               |        |        |          |        |  |  |
| 50-84%                                                                                                                                | 190       | 600                  | 1,770                 | >1,770             |       |                               |        |        |          |        |  |  |
| 85-100%                                                                                                                               | 830       | 1,770                | >1,770                | **                 |       |                               |        |        |          |        |  |  |
| PEDESTRIAN MODE <sup>2</sup>                                                                                                          |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
| (Multiply motorized vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.) |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
| Sidewalk Coverage                                                                                                                     | B         | C                    | D                     | E                  |       |                               |        |        |          |        |  |  |
| 0-49%                                                                                                                                 | *         | *                    | 260                   | 850                |       |                               |        |        |          |        |  |  |
| 50-84%                                                                                                                                | *         | 150                  | 780                   | 1,420              |       |                               |        |        |          |        |  |  |
| 85-100%                                                                                                                               | 340       | 960                  | 1,560                 | >1,770             |       |                               |        |        |          |        |  |  |
| BUS MODE (Scheduled Fixed Route) <sup>3</sup>                                                                                         |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
| (Buses in peak hour in peak direction)                                                                                                |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
| Sidewalk Coverage                                                                                                                     | B         | C                    | D                     | E                  |       |                               |        |        |          |        |  |  |
| 0-84%                                                                                                                                 | > 5       | ≥ 4                  | ≥ 3                   | ≥ 2                |       |                               |        |        |          |        |  |  |
| 85-100%                                                                                                                               | > 4       | ≥ 3                  | ≥ 2                   | ≥ 1                |       |                               |        |        |          |        |  |  |
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|                                                                                                                                       |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
|                                                                                                                                       |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
|                                                                                                                                       |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
|                                                                                                                                       |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
|                                                                                                                                       |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
|                                                                                                                                       |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
|                                                                                                                                       |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
|                                                                                                                                       |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
|                                                                                                                                       |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
|                                                                                                                                       |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
|                                                                                                                                       |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
|                                                                                                                                       |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
|                                                                                                                                       |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
|                                                                                                                                       |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
|                                                                                                                                       |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
|                                                                                                                                       |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
|                                                                                                                                       |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
|                                                                                                                                       |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
|                                                                                                                                       |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
|                                                                                                                                       |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
|                                                                                                                                       |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
|                                                                                                                                       |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
|                                                                                                                                       |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
|                                                                                                                                       |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
|                                                                                                                                       |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
|                                                                                                                                       |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
|                                                                                                                                       |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
|                                                                                                                                       |           |                      |                       |                    |       |                               |        |        |          |        |  |  |
|                                                                                                                                       |           |                      |                       |                    |       |                               |        |        |          |        |  |  |

**TABLE 4**  
(continued)

**Generalized Peak Hour Two-Way Volumes for Florida's Urbanized Areas**

03/14/2018

| INPUT VALUE ASSUMPTIONS                | Uninterrupted Flow Facilities |          |                  | Interrupted Flow Facilities |       |                 |        |           |            |
|----------------------------------------|-------------------------------|----------|------------------|-----------------------------|-------|-----------------|--------|-----------|------------|
|                                        | Freeways                      | Highways |                  | Principal Arterials         |       | Minor Arterials |        | Bicycle   | Pedestrian |
| ROADWAY CHARACTERISTICS                |                               |          |                  |                             |       |                 |        |           |            |
| Area type (urban, rural)               | urban                         |          |                  |                             |       |                 |        |           |            |
| Number of through lanes (both dir.)    | 4-12                          | 2        | 4-6              | 2-4                         | 6     | 2-4             | 6      | 4         | 4          |
| Posted speed (mph)                     | 70                            | 50       | 50               | 50                          | 50    | 40              | 40     | 45        | 45         |
| Free flow speed (mph)                  | 75                            | 55       | 55               | 55                          | 55    | 45              | 45     | 50        | 50         |
| Auxiliary Lanes (n, y)                 | n                             |          |                  |                             |       |                 |        |           |            |
| Median (d, u, twlt)                    |                               |          | d                |                             |       |                 |        |           |            |
| Terrain (l,r)                          | l                             | l        | l                | l                           | l     | l               | l      | l         | l          |
| % no passing zone                      |                               | 80       |                  |                             |       |                 |        |           |            |
| Exclusive left turn lane impact (n, y) |                               | [n]      | y                | y                           | y     | y               | y      | y         | y          |
| Exclusive right turn lanes (n, y)      |                               |          |                  | n                           | y     | n               | y      |           |            |
| Facility length (mi)                   | 3                             | 5        | 5                | 2                           | 2     | 2               | 2      | 2         | 2          |
| Interchange Density (intch/mi)         | 1                             |          |                  |                             |       |                 |        |           |            |
| TRAFFIC CHARACTERISTICS                |                               |          |                  |                             |       |                 |        |           |            |
| Planning analysis hour factor (K)      | 0.090                         | 0.090    | 0.090            | 0.090                       | 0.090 | 0.090           | 0.090  | 0.090     | 0.090      |
| Directional distribution factor (D)    | 0.55                          | 0.55     | 0.55             | 0.55                        | 0.55  | 0.55            | 0.55   | 0.565     | 0.565      |
| Peak hour factor (PHF)                 | 1.00                          | 1.00     | 1.00             | 1.00                        | 1.00  | 1.00            | 1.00   | 1.00      | 1.00       |
| Base saturation flow rate (pcphpl)     | 2,400                         | 1,700    | 2,100            | 1,950                       | 1,950 | 1,950           | 1,950  | 1,950     | 1,950      |
| Heavy vehicle percent                  | 4.0                           | 2.0      | 2.0              | 2.0                         | 2.0   | 2.0             | 2.0    | 2.5       | 2.0        |
| Speed Adjustment Factor (SAF)          | 0.950                         |          | 0.950            |                             |       |                 |        |           |            |
| Capacity Adjustment Factor (CAF)       | 0.939                         |          | 0.939            |                             |       |                 |        |           |            |
| % left turns                           |                               |          |                  | 12                          | 12    | 12              | 12     | 12        | 12         |
| % right turns                          |                               |          |                  | 12                          | 12    | 12              | 12     | 12        | 12         |
| CONTROL CHARACTERISTICS                |                               |          |                  |                             |       |                 |        |           |            |
| Number of signals                      |                               |          |                  | 5                           | 5     | 9               | 9      | 4         | 6          |
| Arrival type (1-6)                     |                               |          |                  | 3                           | 3     | 3               | 3      | 4         | 4          |
| Signal type (a, c, p)                  |                               |          |                  | c                           | c     | c               | c      | c         | c          |
| Cycle length (C)                       |                               |          |                  | 150                         | 150   | 120             | 120    | 120       | 120        |
| Effective green ratio (g/C)            |                               |          |                  | 0.44                        | 0.44  | 0.44            | 0.44   | 0.44      | 0.44       |
| MULTIMODAL CHARACTERISTICS             |                               |          |                  |                             |       |                 |        |           |            |
| Paved shoulder/bicycle lane (n, y)     |                               |          |                  |                             |       |                 |        | n, 50%, y | n          |
| Outside lane width                     |                               |          |                  |                             |       |                 |        | t         | t          |
| Pavement condition                     |                               |          |                  |                             |       |                 |        | t         |            |
| On-street parking                      |                               |          |                  |                             |       |                 |        | n         | n          |
| Sidewalk (n, y)                        |                               |          |                  |                             |       |                 |        |           | n, 50%, y  |
| Sidewalk/roadway separation (a, t, w)  |                               |          |                  |                             |       |                 |        |           | t          |
| Sidewalk protective barrier (n, y)     |                               |          |                  |                             |       |                 |        |           | n          |
| LEVEL OF SERVICE THRESHOLDS            |                               |          |                  |                             |       |                 |        |           |            |
| Level of Service                       | Freeways                      | Highways |                  | Arterials                   |       | Bicycle         | Ped    | Bus       |            |
|                                        | Density pc/mi/ln              | Two-Lane | Multilane        | Principal & Minor           |       | Score           | Score  | Buses/hr. |            |
|                                        |                               | %ffs     | Density pc/mi/ln | %bffs                       |       |                 |        |           |            |
| B                                      | ≤ 18                          | > 83.3   | ≤ 18             | > 67                        |       | ≤ 2.75          | ≤ 2.75 | ≤ 6       |            |
| C                                      | ≤ 26                          | > 75.0   | ≤ 26             | > 50                        |       | ≤ 3.50          | ≤ 3.50 | ≤ 4       |            |
| D                                      | ≤ 35                          | > 66.7   | ≤ 35             | > 40                        |       | ≤ 4.25          | ≤ 4.25 | < 3       |            |
| E                                      | ≤ 45                          | ≤ 66.7   | ≤ 45             | > 30                        |       | ≤ 5.00          | ≤ 5.00 | < 2       |            |

pc/mi/ln = passenger cars per mile per lane

%ffs = percent free flow speed

%bffs = percent base free flow speed

# **APPENDIX B**

## Traffic Count Data Worksheets

**VOLUME**

N 11th Ave Bet. W 6th St &amp; W 7th St

Day: Thursday  
Date: 10/1/2020City: Hanford  
Project #: CA20\_90150\_008

| DAILY TOTALS |       |       |     |     | NB     | SB        | EB    |       |     |     |       | WB   | Total |
|--------------|-------|-------|-----|-----|--------|-----------|-------|-------|-----|-----|-------|------|-------|
|              |       |       |     |     | 11,082 | 11,303    |       |       |     |     |       | 0    | 0     |
| AM Period    | NB    | SB    | EB  | WB  | TOTAL  | PM Period | NB    | SB    | EB  | WB  | TOTAL |      |       |
| 0:00         | 31    | 25    |     |     | 56     | 12:00     | 217   | 224   |     |     | 441   |      |       |
| 0:15         | 30    | 21    |     |     | 51     | 12:15     | 222   | 199   |     |     | 421   |      |       |
| 0:30         | 20    | 22    |     |     | 42     | 12:30     | 184   | 222   |     |     | 406   |      |       |
| 0:45         | 12    | 93    | 18  | 86  | 30     | 12:45     | 171   | 794   | 206 | 851 | 377   | 1645 |       |
| 1:00         | 11    | 14    |     |     | 25     | 13:00     | 179   | 172   |     |     | 351   |      |       |
| 1:15         | 13    | 10    |     |     | 23     | 13:15     | 201   | 192   |     |     | 393   |      |       |
| 1:30         | 9     | 8     |     |     | 17     | 13:30     | 195   | 193   |     |     | 388   |      |       |
| 1:45         | 12    | 45    | 14  | 46  | 26     | 13:45     | 238   | 813   | 204 | 761 | 442   | 1574 |       |
| 2:00         | 19    | 5     |     |     | 24     | 14:00     | 176   | 184   |     |     | 360   |      |       |
| 2:15         | 10    | 7     |     |     | 17     | 14:15     | 208   | 184   |     |     | 392   |      |       |
| 2:30         | 9     | 8     |     |     | 17     | 14:30     | 224   | 218   |     |     | 442   |      |       |
| 2:45         | 10    | 48    | 10  | 30  | 20     | 14:45     | 220   | 828   | 198 | 784 | 418   | 1612 |       |
| 3:00         | 15    | 10    |     |     | 25     | 15:00     | 242   | 227   |     |     | 469   |      |       |
| 3:15         | 4     | 10    |     |     | 14     | 15:15     | 222   | 194   |     |     | 416   |      |       |
| 3:30         | 9     | 17    |     |     | 26     | 15:30     | 228   | 236   |     |     | 464   |      |       |
| 3:45         | 12    | 40    | 15  | 52  | 27     | 15:45     | 223   | 915   | 223 | 880 | 446   | 1795 |       |
| 4:00         | 10    | 12    |     |     | 22     | 16:00     | 247   | 243   |     |     | 490   |      |       |
| 4:15         | 19    | 25    |     |     | 44     | 16:15     | 242   | 210   |     |     | 452   |      |       |
| 4:30         | 21    | 27    |     |     | 48     | 16:30     | 239   | 234   |     |     | 473   |      |       |
| 4:45         | 33    | 83    | 36  | 100 | 69     | 16:45     | 215   | 943   | 225 | 912 | 440   | 1855 |       |
| 5:00         | 34    | 38    |     |     | 72     | 17:00     | 223   | 256   |     |     | 479   |      |       |
| 5:15         | 43    | 61    |     |     | 104    | 17:15     | 207   | 229   |     |     | 436   |      |       |
| 5:30         | 33    | 75    |     |     | 108    | 17:30     | 183   | 220   |     |     | 403   |      |       |
| 5:45         | 51    | 161   | 75  | 249 | 126    | 17:45     | 193   | 806   | 175 | 880 | 368   | 1686 |       |
| 6:00         | 45    | 100   |     |     | 145    | 18:00     | 174   | 229   |     |     | 403   |      |       |
| 6:15         | 88    | 92    |     |     | 180    | 18:15     | 182   | 172   |     |     | 354   |      |       |
| 6:30         | 61    | 79    |     |     | 140    | 18:30     | 164   | 183   |     |     | 347   |      |       |
| 6:45         | 73    | 267   | 89  | 360 | 162    | 18:45     | 155   | 675   | 177 | 761 | 332   | 1436 |       |
| 7:00         | 69    | 96    |     |     | 165    | 19:00     | 156   | 172   |     |     | 328   |      |       |
| 7:15         | 103   | 114   |     |     | 217    | 19:15     | 137   | 156   |     |     | 293   |      |       |
| 7:30         | 140   | 117   |     |     | 257    | 19:30     | 131   | 147   |     |     | 278   |      |       |
| 7:45         | 186   | 498   | 117 | 444 | 303    | 19:45     | 115   | 539   | 140 | 615 | 255   | 1154 |       |
| 8:00         | 167   | 108   |     |     | 275    | 20:00     | 95    | 126   |     |     | 221   |      |       |
| 8:15         | 134   | 111   |     |     | 245    | 20:15     | 89    | 107   |     |     | 196   |      |       |
| 8:30         | 143   | 114   |     |     | 257    | 20:30     | 69    | 98    |     |     | 167   |      |       |
| 8:45         | 171   | 615   | 120 | 453 | 291    | 20:45     | 72    | 325   | 75  | 406 | 147   | 731  |       |
| 9:00         | 153   | 139   |     |     | 292    | 21:00     | 59    | 102   |     |     | 161   |      |       |
| 9:15         | 134   | 155   |     |     | 289    | 21:15     | 45    | 82    |     |     | 127   |      |       |
| 9:30         | 166   | 127   |     |     | 293    | 21:30     | 55    | 69    |     |     | 124   |      |       |
| 9:45         | 171   | 624   | 133 | 554 | 304    | 21:45     | 58    | 217   | 63  | 316 | 121   | 533  |       |
| 10:00        | 147   | 164   |     |     | 311    | 22:00     | 44    | 52    |     |     | 96    |      |       |
| 10:15        | 174   | 176   |     |     | 350    | 22:15     | 46    | 45    |     |     | 91    |      |       |
| 10:30        | 165   | 156   |     |     | 321    | 22:30     | 50    | 57    |     |     | 107   |      |       |
| 10:45        | 201   | 687   | 178 | 674 | 379    | 22:45     | 37    | 177   | 40  | 194 | 77    | 371  |       |
| 11:00        | 171   | 187   |     |     | 358    | 23:00     | 43    | 26    |     |     | 69    |      |       |
| 11:15        | 190   | 201   |     |     | 391    | 23:15     | 38    | 24    |     |     | 62    |      |       |
| 11:30        | 169   | 200   |     |     | 369    | 23:30     | 33    | 42    |     |     | 75    |      |       |
| 11:45        | 206   | 736   | 179 | 767 | 385    | 23:45     | 39    | 153   | 36  | 128 | 75    | 281  |       |
| TOTALS       | 3897  | 3815  |     |     | 7712   | TOTALS    | 7185  | 7488  |     |     | 14673 |      |       |
| SPLIT %      | 50.5% | 49.5% |     |     | 34.5%  | SPLIT %   | 49.0% | 51.0% |     |     | 65.5% |      |       |

| DAILY TOTALS    |       |       |       |       | NB     | SB              | EB    |       |       |       |       | WB | Total |  |
|-----------------|-------|-------|-------|-------|--------|-----------------|-------|-------|-------|-------|-------|----|-------|--|
|                 |       |       |       |       | 11,082 | 11,303          |       |       |       |       |       | 0  |       |  |
| AM Peak Hour    | 11:45 | 11:45 |       |       | 11:45  | PM Peak Hour    | 15:45 | 16:30 |       |       | 15:45 |    |       |  |
| AM Pk Volume    | 829   | 824   |       |       | 1653   | PM Pk Volume    | 951   | 944   |       |       | 1861  |    |       |  |
| Pk Hr Factor    | 0.934 | 0.920 |       |       | 0.937  | Pk Hr Factor    | 0.963 | 0.922 |       |       | 0.949 |    |       |  |
| 7 - 9 Volume    | 1113  | 897   | 0     | 0     | 2010   | 4 - 6 Volume    | 1749  | 1792  | 0     | 0     | 3541  |    |       |  |
| 7 - 9 Peak Hour | 7:45  | 7:15  |       |       | 7:30   | 4 - 6 Peak Hour | 16:00 | 16:30 |       |       | 16:00 |    |       |  |
| 7 - 9 Pk Volume | 630   | 456   | 0     | 0     | 1080   | 4 - 6 Pk Volume | 943   | 944   | 0     | 0     | 1855  |    |       |  |
| Pk Hr Factor    | 0.847 | 0.974 | 0.000 | 0.000 | 0.891  | Pk Hr Factor    | 0.954 | 0.922 | 0.000 | 0.000 | 0.946 |    |       |  |



**VOLUME**

W 6th St Bet. Campus Dr &amp; N 11th Ave

Day: Thursday  
Date: 10/1/2020City: Hanford  
Project #: CA20\_90150\_007

| DAILY TOTALS |    |    |       |       | NB    | SB |           |    |    |       |       | EB    | WB    | Total |
|--------------|----|----|-------|-------|-------|----|-----------|----|----|-------|-------|-------|-------|-------|
|              |    |    |       |       | 0     | 0  |           |    |    |       |       | 740   | 1,022 | 1,762 |
| AM Period    | NB | SB | EB    | WB    | TOTAL |    | PM Period | NB | SB | EB    | WB    | TOTAL |       |       |
| 0:00         |    |    | 0     | 3     | 3     |    | 12:00     |    |    | 19    | 11    | 30    |       |       |
| 0:15         |    |    | 2     | 1     | 3     |    | 12:15     |    |    | 17    | 28    | 45    |       |       |
| 0:30         |    |    | 0     | 0     | 0     |    | 12:30     |    |    | 22    | 22    | 44    |       |       |
| 0:45         |    |    | 2     | 4     | 2     | 6  | 12:45     |    |    | 20    | 78    | 26    | 87    | 165   |
| 1:00         |    |    | 2     | 0     | 2     |    | 13:00     |    |    | 13    | 24    | 37    |       |       |
| 1:15         |    |    | 0     | 0     | 0     |    | 13:15     |    |    | 13    | 19    | 32    |       |       |
| 1:30         |    |    | 1     | 0     | 1     |    | 13:30     |    |    | 18    | 23    | 41    |       |       |
| 1:45         |    |    | 0     | 3     | 3     | 3  | 13:45     |    |    | 16    | 60    | 20    | 86    | 146   |
| 2:00         |    |    | 0     | 1     | 1     |    | 14:00     |    |    | 14    | 24    | 38    |       |       |
| 2:15         |    |    | 0     | 1     | 1     |    | 14:15     |    |    | 15    | 19    | 34    |       |       |
| 2:30         |    |    | 1     | 0     | 1     |    | 14:30     |    |    | 16    | 19    | 35    |       |       |
| 2:45         |    |    | 1     | 2     | 3     | 5  | 14:45     |    |    | 10    | 55    | 18    | 80    | 135   |
| 3:00         |    |    | 1     | 1     | 2     |    | 15:00     |    |    | 19    | 18    | 37    |       |       |
| 3:15         |    |    | 1     | 0     | 1     |    | 15:15     |    |    | 12    | 23    | 35    |       |       |
| 3:30         |    |    | 0     | 1     | 1     |    | 15:30     |    |    | 13    | 19    | 32    |       |       |
| 3:45         |    |    | 1     | 3     | 0     | 2  | 15:45     |    |    | 8     | 52    | 23    | 83    | 135   |
| 4:00         |    |    | 1     | 4     | 5     |    | 16:00     |    |    | 15    | 11    | 26    |       |       |
| 4:15         |    |    | 0     | 2     | 2     |    | 16:15     |    |    | 15    | 18    | 33    |       |       |
| 4:30         |    |    | 1     | 1     | 2     |    | 16:30     |    |    | 10    | 15    | 25    |       |       |
| 4:45         |    |    | 2     | 4     | 1     | 8  | 16:45     |    |    | 12    | 52    | 22    | 66    | 118   |
| 5:00         |    |    | 0     | 1     | 1     |    | 17:00     |    |    | 17    | 20    | 37    |       |       |
| 5:15         |    |    | 1     | 2     | 3     |    | 17:15     |    |    | 16    | 15    | 31    |       |       |
| 5:30         |    |    | 2     | 14    | 16    |    | 17:30     |    |    | 13    | 11    | 24    |       |       |
| 5:45         |    |    | 1     | 4     | 9     | 26 | 17:45     |    |    | 3     | 49    | 12    | 58    | 107   |
| 6:00         |    |    | 3     | 2     | 5     |    | 18:00     |    |    | 7     | 11    | 18    |       |       |
| 6:15         |    |    | 4     | 3     | 7     |    | 18:15     |    |    | 7     | 18    | 25    |       |       |
| 6:30         |    |    | 9     | 8     | 17    |    | 18:30     |    |    | 13    | 20    | 33    |       |       |
| 6:45         |    |    | 9     | 25    | 15    | 28 | 18:45     |    |    | 7     | 34    | 13    | 62    | 96    |
| 7:00         |    |    | 2     | 5     | 7     |    | 19:00     |    |    | 9     | 10    | 19    |       |       |
| 7:15         |    |    | 5     | 10    | 15    |    | 19:15     |    |    | 9     | 6     | 15    |       |       |
| 7:30         |    |    | 13    | 12    | 25    |    | 19:30     |    |    | 9     | 9     | 18    |       |       |
| 7:45         |    |    | 20    | 40    | 36    | 63 | 19:45     |    |    | 12    | 39    | 10    | 35    | 74    |
| 8:00         |    |    | 11    | 18    | 29    |    | 20:00     |    |    | 5     | 5     | 10    |       |       |
| 8:15         |    |    | 6     | 16    | 22    |    | 20:15     |    |    | 2     | 6     | 8     |       |       |
| 8:30         |    |    | 5     | 13    | 18    |    | 20:30     |    |    | 4     | 7     | 11    |       |       |
| 8:45         |    |    | 20    | 42    | 17    | 64 | 20:45     |    |    | 6     | 17    | 6     | 24    | 41    |
| 9:00         |    |    | 9     | 32    | 41    |    | 21:00     |    |    | 8     | 4     | 12    |       |       |
| 9:15         |    |    | 11    | 15    | 26    |    | 21:15     |    |    | 5     | 3     | 8     |       |       |
| 9:30         |    |    | 9     | 7     | 16    |    | 21:30     |    |    | 2     | 2     | 4     |       |       |
| 9:45         |    |    | 8     | 37    | 14    | 68 | 21:45     |    |    | 1     | 16    | 4     | 13    | 29    |
| 10:00        |    |    | 10    | 20    | 30    |    | 22:00     |    |    | 2     | 2     | 4     |       |       |
| 10:15        |    |    | 11    | 16    | 27    |    | 22:15     |    |    | 2     | 3     | 5     |       |       |
| 10:30        |    |    | 10    | 9     | 19    |    | 22:30     |    |    | 4     | 3     | 7     |       |       |
| 10:45        |    |    | 9     | 40    | 19    | 64 | 22:45     |    |    | 3     | 11    | 5     | 13    | 24    |
| 11:00        |    |    | 20    | 17    | 37    |    | 23:00     |    |    | 2     | 2     | 4     |       |       |
| 11:15        |    |    | 17    | 18    | 35    |    | 23:15     |    |    | 2     | 0     | 2     |       |       |
| 11:30        |    |    | 8     | 14    | 22    |    | 23:30     |    |    | 3     | 4     | 7     |       |       |
| 11:45        |    |    | 20    | 65    | 19    | 68 | 23:45     |    |    | 1     | 8     | 4     | 10    | 18    |
| TOTALS       |    |    | 269   | 405   | 674   |    | TOTALS    |    |    | 471   | 617   | 1088  |       |       |
| SPLIT %      |    |    | 39.9% | 60.1% | 38.3% |    | SPLIT %   |    |    | 43.3% | 56.7% | 61.7% |       |       |

| DAILY TOTALS    |       |       |       |       | NB    | SB |                 |       |       |       |       | EB    | WB    | Total |
|-----------------|-------|-------|-------|-------|-------|----|-----------------|-------|-------|-------|-------|-------|-------|-------|
|                 |       |       |       |       | 0     | 0  |                 |       |       |       |       | 740   | 1,022 | 1,762 |
| AM Peak Hour    |       |       | 11:45 | 7:45  | 11:45 |    | PM Peak Hour    |       |       | 12:00 | 12:15 | 12:15 |       |       |
| AM Pk Volume    |       |       | 78    | 83    | 158   |    | PM Pk Volume    |       |       | 78    | 100   | 172   |       |       |
| Pk Hr Factor    |       |       | 0.886 | 0.576 | 0.878 |    | Pk Hr Factor    |       |       | 0.886 | 0.893 | 0.935 |       |       |
| 7 - 9 Volume    | 0     | 0     | 82    | 127   | 209   |    | 4 - 6 Volume    | 0     | 0     | 101   | 124   | 225   |       |       |
| 7 - 9 Peak Hour |       |       | 7:30  | 7:45  | 7:30  |    | 4 - 6 Peak Hour |       |       | 16:45 | 16:15 | 16:15 |       |       |
| 7 - 9 Pk Volume | 0     | 0     | 50    | 83    | 132   |    | 4 - 6 Pk Volume | 0     | 0     | 58    | 75    | 129   |       |       |
| Pk Hr Factor    | 0.000 | 0.000 | 0.625 | 0.576 | 0.589 |    | Pk Hr Factor    | 0.000 | 0.000 | 0.853 | 0.852 | 0.872 |       |       |

**VOLUME**

W 7th St Bet. Campus Dr &amp; N 11th Ave

Day: Thursday  
Date: 10/1/2020City: Hanford  
Project #: CA20\_90150\_006

| DAILY TOTALS |    |    |       |       | NB    | SB  |           |    |    |       |       | EB    | WB    | Total |     |
|--------------|----|----|-------|-------|-------|-----|-----------|----|----|-------|-------|-------|-------|-------|-----|
|              |    |    |       |       | 0     | 0   |           |    |    |       |       | 3,085 | 3,870 | 6,955 |     |
| AM Period    | NB | SB | EB    | WB    | TOTAL |     | PM Period | NB | SB | EB    | WB    | TOTAL |       |       |     |
| 0:00         |    |    | 3     | 2     | 5     |     | 12:00     |    |    | 58    | 102   | 160   |       |       |     |
| 0:15         |    |    | 2     | 4     | 6     |     | 12:15     |    |    | 59    | 78    | 137   |       |       |     |
| 0:30         |    |    | 1     | 2     | 3     |     | 12:30     |    |    | 56    | 92    | 148   |       |       |     |
| 0:45         |    |    | 4     | 10    | 6     | 20  | 12:45     |    |    | 73    | 246   | 63    | 335   | 136   | 581 |
| 1:00         |    |    | 5     | 3     | 8     |     | 13:00     |    |    | 64    | 92    | 156   |       |       |     |
| 1:15         |    |    | 1     | 5     | 6     |     | 13:15     |    |    | 79    | 77    | 156   |       |       |     |
| 1:30         |    |    | 2     | 2     | 4     |     | 13:30     |    |    | 61    | 82    | 143   |       |       |     |
| 1:45         |    |    | 2     | 10    | 3     | 21  | 13:45     |    |    | 57    | 261   | 74    | 325   | 131   | 586 |
| 2:00         |    |    | 5     | 5     | 10    |     | 14:00     |    |    | 47    | 88    | 135   |       |       |     |
| 2:15         |    |    | 0     | 0     | 0     |     | 14:15     |    |    | 48    | 88    | 136   |       |       |     |
| 2:30         |    |    | 4     | 6     | 10    |     | 14:30     |    |    | 78    | 100   | 178   |       |       |     |
| 2:45         |    |    | 5     | 14    | 8     | 28  | 14:45     |    |    | 58    | 231   | 89    | 365   | 147   | 596 |
| 3:00         |    |    | 1     | 2     | 3     |     | 15:00     |    |    | 64    | 85    | 149   |       |       |     |
| 3:15         |    |    | 1     | 2     | 3     |     | 15:15     |    |    | 74    | 90    | 164   |       |       |     |
| 3:30         |    |    | 4     | 2     | 6     |     | 15:30     |    |    | 65    | 82    | 147   |       |       |     |
| 3:45         |    |    | 2     | 8     | 6     | 18  | 15:45     |    |    | 59    | 262   | 86    | 343   | 145   | 605 |
| 4:00         |    |    | 2     | 5     | 7     |     | 16:00     |    |    | 67    | 81    | 148   |       |       |     |
| 4:15         |    |    | 4     | 1     | 5     |     | 16:15     |    |    | 68    | 76    | 144   |       |       |     |
| 4:30         |    |    | 3     | 6     | 9     |     | 16:30     |    |    | 71    | 64    | 135   |       |       |     |
| 4:45         |    |    | 4     | 13    | 12    | 33  | 16:45     |    |    | 61    | 267   | 79    | 300   | 140   | 567 |
| 5:00         |    |    | 3     | 7     | 10    |     | 17:00     |    |    | 80    | 76    | 156   |       |       |     |
| 5:15         |    |    | 5     | 16    | 21    |     | 17:15     |    |    | 53    | 84    | 137   |       |       |     |
| 5:30         |    |    | 13    | 8     | 21    |     | 17:30     |    |    | 60    | 65    | 125   |       |       |     |
| 5:45         |    |    | 3     | 24    | 14    | 66  | 17:45     |    |    | 48    | 241   | 58    | 283   | 106   | 524 |
| 6:00         |    |    | 10    | 10    | 20    |     | 18:00     |    |    | 60    | 49    | 109   |       |       |     |
| 6:15         |    |    | 8     | 24    | 32    |     | 18:15     |    |    | 40    | 55    | 95    |       |       |     |
| 6:30         |    |    | 9     | 30    | 39    |     | 18:30     |    |    | 49    | 61    | 110   |       |       |     |
| 6:45         |    |    | 9     | 36    | 35    | 126 | 18:45     |    |    | 44    | 193   | 60    | 225   | 104   | 418 |
| 7:00         |    |    | 21    | 21    | 42    |     | 19:00     |    |    | 54    | 51    | 105   |       |       |     |
| 7:15         |    |    | 26    | 24    | 50    |     | 19:15     |    |    | 41    | 34    | 75    |       |       |     |
| 7:30         |    |    | 23    | 42    | 65    |     | 19:30     |    |    | 41    | 35    | 76    |       |       |     |
| 7:45         |    |    | 29    | 99    | 85    | 242 | 19:45     |    |    | 40    | 176   | 34    | 154   | 74    | 330 |
| 8:00         |    |    | 28    | 30    | 58    |     | 20:00     |    |    | 28    | 40    | 68    |       |       |     |
| 8:15         |    |    | 39    | 44    | 83    |     | 20:15     |    |    | 22    | 29    | 51    |       |       |     |
| 8:30         |    |    | 37    | 27    | 64    |     | 20:30     |    |    | 19    | 20    | 39    |       |       |     |
| 8:45         |    |    | 43    | 147   | 93    | 298 | 20:45     |    |    | 16    | 85    | 21    | 110   | 37    | 195 |
| 9:00         |    |    | 39    | 57    | 96    |     | 21:00     |    |    | 10    | 16    | 26    |       |       |     |
| 9:15         |    |    | 56    | 41    | 97    |     | 21:15     |    |    | 19    | 28    | 47    |       |       |     |
| 9:30         |    |    | 45    | 71    | 116   |     | 21:30     |    |    | 15    | 16    | 31    |       |       |     |
| 9:45         |    |    | 55    | 195   | 113   | 422 | 21:45     |    |    | 9     | 53    | 16    | 76    | 25    | 129 |
| 10:00        |    |    | 49    | 73    | 122   |     | 22:00     |    |    | 12    | 6     | 18    |       |       |     |
| 10:15        |    |    | 58    | 66    | 124   |     | 22:15     |    |    | 11    | 9     | 20    |       |       |     |
| 10:30        |    |    | 50    | 64    | 114   |     | 22:30     |    |    | 12    | 9     | 21    |       |       |     |
| 10:45        |    |    | 56    | 213   | 125   | 485 | 22:45     |    |    | 9     | 44    | 7     | 31    | 16    | 75  |
| 11:00        |    |    | 45    | 73    | 118   |     | 23:00     |    |    | 8     | 8     | 16    |       |       |     |
| 11:15        |    |    | 68    | 87    | 155   |     | 23:15     |    |    | 4     | 6     | 10    |       |       |     |
| 11:30        |    |    | 54    | 71    | 125   |     | 23:30     |    |    | 8     | 7     | 15    |       |       |     |
| 11:45        |    |    | 65    | 232   | 140   | 538 | 23:45     |    |    | 5     | 25    | 6     | 27    | 11    | 52  |
| TOTALS       |    |    | 1001  | 1296  | 2297  |     | TOTALS    |    |    | 2084  | 2574  | 4658  |       |       |     |
| SPLIT %      |    |    | 43.6% | 56.4% | 33.0% |     | SPLIT %   |    |    | 44.7% | 55.3% | 67.0% |       |       |     |

| DAILY TOTALS    |       |       |       |       | NB    | SB |                 |       |       |       |       | EB    | WB    | Total |  |
|-----------------|-------|-------|-------|-------|-------|----|-----------------|-------|-------|-------|-------|-------|-------|-------|--|
|                 |       |       |       |       | 0     | 0  |                 |       |       |       |       | 3,085 | 3,870 | 6,955 |  |
| AM Peak Hour    |       |       | 11:15 | 11:45 | 11:45 |    | PM Peak Hour    |       |       | 16:15 | 14:00 | 14:30 |       |       |  |
| AM Pk Volume    |       |       | 245   | 347   | 585   |    | PM Pk Volume    |       |       | 280   | 365   | 638   |       |       |  |
| Pk Hr Factor    |       |       | 0.901 | 0.850 | 0.914 |    | Pk Hr Factor    |       |       | 0.875 | 0.913 | 0.896 |       |       |  |
| 7 - 9 Volume    | 0     | 0     | 246   | 294   | 540   |    | 4 - 6 Volume    | 0     | 0     | 508   | 583   | 1091  |       |       |  |
| 7 - 9 Peak Hour |       |       | 8:00  | 7:30  | 8:00  |    | 4 - 6 Peak Hour |       |       | 16:15 | 16:45 | 16:15 |       |       |  |
| 7 - 9 Pk Volume | 0     | 0     | 147   | 172   | 298   |    | 4 - 6 Pk Volume | 0     | 0     | 280   | 304   | 575   |       |       |  |
| Pk Hr Factor    | 0.000 | 0.000 | 0.855 | 0.768 | 0.801 |    | Pk Hr Factor    | 0.000 | 0.000 | 0.875 | 0.905 | 0.921 |       |       |  |

**VOLUME**

Campus Dr Bet. W Lacey Blvd &amp; W 7th St

Day: Thursday  
Date: 10/1/2020City: Hanford  
Project #: CA20\_90150\_005

| DAILY TOTALS |       |       |    |     | NB    | SB        | EB    |       |    |     |       | WB | Total |
|--------------|-------|-------|----|-----|-------|-----------|-------|-------|----|-----|-------|----|-------|
|              |       |       |    |     | 1,511 | 1,394     |       |       |    |     |       | 0  | 0     |
| AM Period    | NB    | SB    | EB | WB  | TOTAL | PM Period | NB    | SB    | EB | WB  | TOTAL |    |       |
| 0:00         | 2     | 3     |    |     | 5     | 12:00     | 48    | 40    |    |     | 88    |    |       |
| 0:15         | 1     | 2     |    |     | 3     | 12:15     | 30    | 27    |    |     | 57    |    |       |
| 0:30         | 3     | 1     |    |     | 4     | 12:30     | 39    | 46    |    |     | 85    |    |       |
| 0:45         | 1     | 7     | 0  | 6   | 13    | 12:45     | 56    | 173   | 42 | 155 | 328   |    |       |
| 1:00         | 0     | 1     |    |     | 1     | 13:00     | 36    | 42    |    |     | 78    |    |       |
| 1:15         | 0     | 0     |    |     | 0     | 13:15     | 31    | 32    |    |     | 63    |    |       |
| 1:30         | 0     | 0     |    |     | 0     | 13:30     | 28    | 31    |    |     | 59    |    |       |
| 1:45         | 3     | 3     | 0  | 1   | 4     | 13:45     | 38    | 133   | 21 | 126 | 259   |    |       |
| 2:00         | 1     | 0     |    |     | 1     | 14:00     | 30    | 26    |    |     | 56    |    |       |
| 2:15         | 0     | 1     |    |     | 1     | 14:15     | 28    | 17    |    |     | 45    |    |       |
| 2:30         | 2     | 0     |    |     | 2     | 14:30     | 30    | 35    |    |     | 65    |    |       |
| 2:45         | 2     | 5     | 1  | 2   | 7     | 14:45     | 31    | 119   | 25 | 103 | 222   |    |       |
| 3:00         | 1     | 1     |    |     | 2     | 15:00     | 30    | 34    |    |     | 64    |    |       |
| 3:15         | 1     | 0     |    |     | 1     | 15:15     | 25    | 23    |    |     | 48    |    |       |
| 3:30         | 1     | 2     |    |     | 3     | 15:30     | 29    | 28    |    |     | 57    |    |       |
| 3:45         | 0     | 3     | 3  | 6   | 9     | 15:45     | 24    | 108   | 22 | 107 | 215   |    |       |
| 4:00         | 1     | 2     |    |     | 3     | 16:00     | 28    | 26    |    |     | 54    |    |       |
| 4:15         | 3     | 3     |    |     | 6     | 16:15     | 40    | 38    |    |     | 78    |    |       |
| 4:30         | 0     | 2     |    |     | 2     | 16:30     | 33    | 39    |    |     | 72    |    |       |
| 4:45         | 2     | 6     | 3  | 10  | 16    | 16:45     | 27    | 128   | 32 | 135 | 263   |    |       |
| 5:00         | 1     | 3     |    |     | 4     | 17:00     | 45    | 49    |    |     | 94    |    |       |
| 5:15         | 1     | 3     |    |     | 4     | 17:15     | 24    | 25    |    |     | 49    |    |       |
| 5:30         | 3     | 5     |    |     | 8     | 17:30     | 27    | 24    |    |     | 51    |    |       |
| 5:45         | 5     | 10    | 6  | 17  | 27    | 17:45     | 19    | 115   | 14 | 112 | 227   |    |       |
| 6:00         | 3     | 3     |    |     | 6     | 18:00     | 16    | 10    |    |     | 26    |    |       |
| 6:15         | 4     | 11    |    |     | 15    | 18:15     | 11    | 14    |    |     | 25    |    |       |
| 6:30         | 4     | 16    |    |     | 20    | 18:30     | 19    | 19    |    |     | 38    |    |       |
| 6:45         | 6     | 17    | 14 | 44  | 61    | 18:45     | 15    | 61    | 11 | 54  | 115   |    |       |
| 7:00         | 9     | 11    |    |     | 20    | 19:00     | 15    | 13    |    |     | 28    |    |       |
| 7:15         | 22    | 14    |    |     | 36    | 19:15     | 17    | 8     |    |     | 25    |    |       |
| 7:30         | 19    | 13    |    |     | 32    | 19:30     | 13    | 11    |    |     | 24    |    |       |
| 7:45         | 45    | 95    | 19 | 57  | 152   | 19:45     | 13    | 58    | 12 | 44  | 102   |    |       |
| 8:00         | 28    | 22    |    |     | 50    | 20:00     | 11    | 4     |    |     | 15    |    |       |
| 8:15         | 15    | 18    |    |     | 33    | 20:15     | 7     | 6     |    |     | 13    |    |       |
| 8:30         | 20    | 19    |    |     | 39    | 20:30     | 4     | 7     |    |     | 11    |    |       |
| 8:45         | 19    | 82    | 26 | 85  | 167   | 20:45     | 1     | 23    | 7  | 24  | 47    |    |       |
| 9:00         | 26    | 19    |    |     | 45    | 21:00     | 3     | 3     |    |     | 6     |    |       |
| 9:15         | 28    | 20    |    |     | 48    | 21:15     | 4     | 4     |    |     | 8     |    |       |
| 9:30         | 20    | 17    |    |     | 37    | 21:30     | 7     | 0     |    |     | 7     |    |       |
| 9:45         | 22    | 96    | 32 | 88  | 184   | 21:45     | 3     | 17    | 4  | 11  | 28    |    |       |
| 10:00        | 30    | 16    |    |     | 46    | 22:00     | 1     | 3     |    |     | 4     |    |       |
| 10:15        | 26    | 21    |    |     | 47    | 22:15     | 6     | 1     |    |     | 7     |    |       |
| 10:30        | 23    | 16    |    |     | 39    | 22:30     | 2     | 3     |    |     | 5     |    |       |
| 10:45        | 24    | 103   | 26 | 79  | 182   | 22:45     | 2     | 11    | 2  | 9   | 20    |    |       |
| 11:00        | 31    | 22    |    |     | 53    | 23:00     | 1     | 3     |    |     | 4     |    |       |
| 11:15        | 36    | 30    |    |     | 66    | 23:15     | 0     | 1     |    |     | 1     |    |       |
| 11:30        | 28    | 28    |    |     | 56    | 23:30     | 4     | 0     |    |     | 4     |    |       |
| 11:45        | 37    | 132   | 32 | 112 | 244   | 23:45     | 1     | 6     | 3  | 7   | 13    |    |       |
| TOTALS       | 559   | 507   |    |     | 1066  | TOTALS    | 952   | 887   |    |     | 1839  |    |       |
| SPLIT %      | 52.4% | 47.6% |    |     | 36.7% | SPLIT %   | 51.8% | 48.2% |    |     | 63.3% |    |       |

| DAILY TOTALS    |       |       |       |       | NB    | SB              |                 |       |       |       |       | EB | WB    |  |  |  |  |  | Total |
|-----------------|-------|-------|-------|-------|-------|-----------------|-----------------|-------|-------|-------|-------|----|-------|--|--|--|--|--|-------|
|                 |       |       |       |       | 1,511 | 1,394           |                 |       |       |       |       | 0  | 0     |  |  |  |  |  | 2,905 |
| AM Peak Hour    | 11:45 | 11:45 |       |       |       | 11:45           | PM Peak Hour    | 12:00 | 12:30 |       |       |    | 12:00 |  |  |  |  |  |       |
| AM Pk Volume    | 154   | 145   |       |       |       | 299             | PM Pk Volume    | 173   | 162   |       |       |    | 328   |  |  |  |  |  |       |
| Pk Hr Factor    | 0.802 | 0.788 |       |       |       | 0.849           | Pk Hr Factor    | 0.772 | 0.880 |       |       |    | 0.837 |  |  |  |  |  |       |
| 7 - 9 Volume    | 177   | 142   | 0     | 0     | 319   | 4 - 6 Volume    | 243             | 247   | 0     | 0     | 490   |    |       |  |  |  |  |  |       |
| 7 - 9 Peak Hour | 7:15  | 8:00  |       |       |       | 7:45            | 4 - 6 Peak Hour | 16:15 | 16:15 |       |       |    | 16:15 |  |  |  |  |  |       |
| 7 - 9 Pk Volume | 114   | 85    | 0     | 0     | 186   | 4 - 6 Pk Volume | 145             | 158   | 0     | 0     | 303   |    |       |  |  |  |  |  |       |
| Pk Hr Factor    | 0.633 | 0.817 | 0.000 | 0.000 | 0.727 | Pk Hr Factor    | 0.806           | 0.806 | 0.000 | 0.000 | 0.806 |    |       |  |  |  |  |  |       |

**VOLUME**

W Lacey Blvd Bet. Cousins Dr &amp; Campus Dr

Day: Thursday  
Date: 10/1/2020City: Hanford  
Project #: CA20\_90150\_004

| DAILY TOTALS |    |    |       |       | NB    | SB  |           |    |    |       |       | EB    | WB    | Total  |
|--------------|----|----|-------|-------|-------|-----|-----------|----|----|-------|-------|-------|-------|--------|
|              |    |    |       |       | 0     | 0   |           |    |    |       |       | 7,648 | 7,723 | 15,371 |
| AM Period    | NB | SB | EB    | WB    | TOTAL |     | PM Period | NB | SB | EB    | WB    | TOTAL |       |        |
| 0:00         |    |    | 11    | 5     | 16    |     | 12:00     |    |    | 155   | 190   | 345   |       |        |
| 0:15         |    |    | 6     | 8     | 14    |     | 12:15     |    |    | 207   | 187   | 394   |       |        |
| 0:30         |    |    | 5     | 7     | 12    |     | 12:30     |    |    | 186   | 204   | 390   |       |        |
| 0:45         |    |    | 4     | 26    | 5     | 25  | 12:45     |    |    | 184   | 732   | 156   | 737   | 1469   |
| 1:00         |    |    | 11    | 7     | 18    |     | 13:00     |    |    | 160   | 163   | 323   |       |        |
| 1:15         |    |    | 5     | 5     | 10    |     | 13:15     |    |    | 186   | 187   | 373   |       |        |
| 1:30         |    |    | 4     | 4     | 8     |     | 13:30     |    |    | 159   | 150   | 309   |       |        |
| 1:45         |    |    | 5     | 25    | 11    | 27  | 13:45     |    |    | 161   | 666   | 168   | 668   | 1334   |
| 2:00         |    |    | 3     | 5     | 8     |     | 14:00     |    |    | 158   | 142   | 300   |       |        |
| 2:15         |    |    | 5     | 3     | 8     |     | 14:15     |    |    | 142   | 131   | 273   |       |        |
| 2:30         |    |    | 1     | 1     | 2     |     | 14:30     |    |    | 145   | 158   | 303   |       |        |
| 2:45         |    |    | 5     | 14    | 5     | 14  | 14:45     |    |    | 136   | 581   | 148   | 579   | 1160   |
| 3:00         |    |    | 2     | 4     | 6     |     | 15:00     |    |    | 165   | 145   | 310   |       |        |
| 3:15         |    |    | 3     | 6     | 9     |     | 15:15     |    |    | 141   | 154   | 295   |       |        |
| 3:30         |    |    | 6     | 2     | 8     |     | 15:30     |    |    | 180   | 166   | 346   |       |        |
| 3:45         |    |    | 2     | 13    | 5     | 17  | 15:45     |    |    | 149   | 635   | 160   | 625   | 1260   |
| 4:00         |    |    | 4     | 3     | 7     |     | 16:00     |    |    | 165   | 181   | 346   |       |        |
| 4:15         |    |    | 5     | 6     | 11    |     | 16:15     |    |    | 157   | 164   | 321   |       |        |
| 4:30         |    |    | 6     | 7     | 13    |     | 16:30     |    |    | 146   | 171   | 317   |       |        |
| 4:45         |    |    | 12    | 27    | 8     | 24  | 16:45     |    |    | 133   | 601   | 180   | 696   | 1297   |
| 5:00         |    |    | 8     | 8     | 16    |     | 17:00     |    |    | 186   | 186   | 372   |       |        |
| 5:15         |    |    | 9     | 8     | 17    |     | 17:15     |    |    | 148   | 165   | 313   |       |        |
| 5:30         |    |    | 8     | 18    | 26    |     | 17:30     |    |    | 133   | 164   | 297   |       |        |
| 5:45         |    |    | 10    | 35    | 18    | 52  | 17:45     |    |    | 116   | 583   | 141   | 656   | 1239   |
| 6:00         |    |    | 15    | 24    | 39    |     | 18:00     |    |    | 133   | 140   | 273   |       |        |
| 6:15         |    |    | 17    | 21    | 38    |     | 18:15     |    |    | 118   | 128   | 246   |       |        |
| 6:30         |    |    | 29    | 26    | 55    |     | 18:30     |    |    | 123   | 113   | 236   |       |        |
| 6:45         |    |    | 32    | 93    | 31    | 102 | 18:45     |    |    | 127   | 501   | 87    | 468   | 969    |
| 7:00         |    |    | 32    | 33    | 65    |     | 19:00     |    |    | 134   | 103   | 237   |       |        |
| 7:15         |    |    | 51    | 42    | 93    |     | 19:15     |    |    | 125   | 111   | 236   |       |        |
| 7:30         |    |    | 59    | 58    | 117   |     | 19:30     |    |    | 105   | 95    | 200   |       |        |
| 7:45         |    |    | 85    | 227   | 64    | 197 | 19:45     |    |    | 112   | 476   | 80    | 389   | 865    |
| 8:00         |    |    | 86    | 69    | 155   |     | 20:00     |    |    | 71    | 66    | 137   |       |        |
| 8:15         |    |    | 75    | 75    | 150   |     | 20:15     |    |    | 75    | 61    | 136   |       |        |
| 8:30         |    |    | 85    | 86    | 171   |     | 20:30     |    |    | 50    | 53    | 103   |       |        |
| 8:45         |    |    | 85    | 331   | 86    | 316 | 20:45     |    |    | 60    | 256   | 31    | 211   | 467    |
| 9:00         |    |    | 90    | 88    | 178   |     | 21:00     |    |    | 34    | 49    | 83    |       |        |
| 9:15         |    |    | 81    | 105   | 186   |     | 21:15     |    |    | 37    | 30    | 67    |       |        |
| 9:30         |    |    | 113   | 112   | 225   |     | 21:30     |    |    | 40    | 32    | 72    |       |        |
| 9:45         |    |    | 136   | 420   | 124   | 429 | 21:45     |    |    | 32    | 143   | 24    | 135   | 278    |
| 10:00        |    |    | 127   | 112   | 239   |     | 22:00     |    |    | 21    | 24    | 45    |       |        |
| 10:15        |    |    | 115   | 158   | 273   |     | 22:15     |    |    | 24    | 27    | 51    |       |        |
| 10:30        |    |    | 135   | 127   | 262   |     | 22:30     |    |    | 26    | 14    | 40    |       |        |
| 10:45        |    |    | 144   | 521   | 170   | 567 | 22:45     |    |    | 20    | 91    | 19    | 84    | 175    |
| 11:00        |    |    | 150   | 151   | 301   |     | 23:00     |    |    | 16    | 11    | 27    |       |        |
| 11:15        |    |    | 153   | 175   | 328   |     | 23:15     |    |    | 19    | 11    | 30    |       |        |
| 11:30        |    |    | 133   | 156   | 289   |     | 23:30     |    |    | 16    | 8     | 24    |       |        |
| 11:45        |    |    | 153   | 589   | 183   | 665 | 23:45     |    |    | 11    | 62    | 10    | 40    | 102    |
| TOTALS       |    |    | 2321  | 2435  | 4756  |     | TOTALS    |    |    | 5327  | 5288  | 10615 |       |        |
| SPLIT %      |    |    | 48.8% | 51.2% | 30.9% |     | SPLIT %   |    |    | 50.2% | 49.8% | 69.1% |       |        |

| DAILY TOTALS    |       |       |       |       | NB    | SB |                 |       |       |       |       | EB    | WB    | Total  |
|-----------------|-------|-------|-------|-------|-------|----|-----------------|-------|-------|-------|-------|-------|-------|--------|
|                 |       |       |       |       | 0     | 0  |                 |       |       |       |       | 7,648 | 7,723 | 15,371 |
| AM Peak Hour    |       |       | 11:45 | 11:45 | 11:45 |    | PM Peak Hour    |       |       | 12:15 | 12:00 | 12:00 |       |        |
| AM Pk Volume    |       |       | 701   | 764   | 1465  |    | PM Pk Volume    |       |       | 737   | 737   | 1469  |       |        |
| Pk Hr Factor    |       |       | 0.847 | 0.936 | 0.930 |    | Pk Hr Factor    |       |       | 0.890 | 0.903 | 0.932 |       |        |
| 7 - 9 Volume    | 0     | 0     | 558   | 513   | 1071  |    | 4 - 6 Volume    | 0     | 0     | 1184  | 1352  | 2536  |       |        |
| 7 - 9 Peak Hour |       |       | 7:45  | 8:00  | 8:00  |    | 4 - 6 Peak Hour |       |       | 16:15 | 16:30 | 16:15 |       |        |
| 7 - 9 Pk Volume | 0     | 0     | 331   | 316   | 647   |    | 4 - 6 Pk Volume | 0     | 0     | 622   | 702   | 1323  |       |        |
| Pk Hr Factor    | 0.000 | 0.000 | 0.962 | 0.919 | 0.946 |    | Pk Hr Factor    | 0.000 | 0.000 | 0.836 | 0.944 | 0.889 |       |        |

**VOLUME**

Glendale Ave W/O 12th Ave

Day: Thursday  
Date: 10/1/2020City: Hanford  
Project #: CA20\_90150\_003

| DAILY TOTALS |    |    |       |       | NB    | SB |           |    |    |       |       | EB    | WB    | Total |     |
|--------------|----|----|-------|-------|-------|----|-----------|----|----|-------|-------|-------|-------|-------|-----|
|              |    |    |       |       | 0     | 0  |           |    |    |       |       | 1,622 | 1,183 | 2,805 |     |
| AM Period    | NB | SB | EB    | WB    | TOTAL |    | PM Period | NB | SB | EB    | WB    | TOTAL |       |       |     |
| 0:00         |    |    | 6     | 4     | 10    |    | 12:00     |    |    | 24    | 19    | 43    |       |       |     |
| 0:15         |    |    | 10    | 2     | 12    |    | 12:15     |    |    | 26    | 17    | 43    |       |       |     |
| 0:30         |    |    | 11    | 0     | 11    |    | 12:30     |    |    | 31    | 25    | 56    |       |       |     |
| 0:45         |    |    | 5     | 32    | 2     | 8  | 12:45     |    |    | 22    | 103   | 18    | 79    | 40    | 182 |
| 1:00         |    |    | 4     | 1     | 5     |    | 13:00     |    |    | 23    | 17    | 40    |       |       |     |
| 1:15         |    |    | 6     | 0     | 6     |    | 13:15     |    |    | 26    | 28    | 54    |       |       |     |
| 1:30         |    |    | 2     | 2     | 4     |    | 13:30     |    |    | 21    | 11    | 32    |       |       |     |
| 1:45         |    |    | 10    | 22    | 3     | 6  | 13:45     |    |    | 19    | 89    | 12    | 68    | 31    | 157 |
| 2:00         |    |    | 2     | 0     | 2     |    | 14:00     |    |    | 25    | 20    | 45    |       |       |     |
| 2:15         |    |    | 2     | 0     | 2     |    | 14:15     |    |    | 31    | 18    | 49    |       |       |     |
| 2:30         |    |    | 4     | 1     | 5     |    | 14:30     |    |    | 33    | 24    | 57    |       |       |     |
| 2:45         |    |    | 3     | 11    | 0     | 1  | 14:45     |    |    | 29    | 118   | 21    | 83    | 50    | 201 |
| 3:00         |    |    | 7     | 8     | 15    |    | 15:00     |    |    | 33    | 24    | 57    |       |       |     |
| 3:15         |    |    | 3     | 2     | 5     |    | 15:15     |    |    | 37    | 22    | 59    |       |       |     |
| 3:30         |    |    | 3     | 0     | 3     |    | 15:30     |    |    | 28    | 16    | 44    |       |       |     |
| 3:45         |    |    | 7     | 20    | 2     | 12 | 15:45     |    |    | 34    | 132   | 16    | 78    | 50    | 210 |
| 4:00         |    |    | 6     | 1     | 7     |    | 16:00     |    |    | 36    | 30    | 66    |       |       |     |
| 4:15         |    |    | 10    | 3     | 13    |    | 16:15     |    |    | 20    | 27    | 47    |       |       |     |
| 4:30         |    |    | 10    | 2     | 12    |    | 16:30     |    |    | 28    | 22    | 50    |       |       |     |
| 4:45         |    |    | 8     | 34    | 3     | 9  | 16:45     |    |    | 35    | 119   | 37    | 116   | 72    | 235 |
| 5:00         |    |    | 10    | 0     | 10    |    | 17:00     |    |    | 33    | 36    | 69    |       |       |     |
| 5:15         |    |    | 18    | 3     | 21    |    | 17:15     |    |    | 40    | 27    | 67    |       |       |     |
| 5:30         |    |    | 11    | 0     | 11    |    | 17:30     |    |    | 21    | 20    | 41    |       |       |     |
| 5:45         |    |    | 14    | 53    | 4     | 7  | 17:45     |    |    | 29    | 123   | 37    | 120   | 66    | 243 |
| 6:00         |    |    | 7     | 5     | 12    |    | 18:00     |    |    | 34    | 20    | 54    |       |       |     |
| 6:15         |    |    | 12    | 6     | 18    |    | 18:15     |    |    | 17    | 22    | 39    |       |       |     |
| 6:30         |    |    | 12    | 9     | 21    |    | 18:30     |    |    | 29    | 15    | 44    |       |       |     |
| 6:45         |    |    | 11    | 42    | 10    | 30 | 18:45     |    |    | 25    | 105   | 10    | 67    | 35    | 172 |
| 7:00         |    |    | 7     | 17    | 24    |    | 19:00     |    |    | 25    | 10    | 35    |       |       |     |
| 7:15         |    |    | 17    | 17    | 34    |    | 19:15     |    |    | 28    | 21    | 49    |       |       |     |
| 7:30         |    |    | 14    | 16    | 30    |    | 19:30     |    |    | 31    | 9     | 40    |       |       |     |
| 7:45         |    |    | 13    | 51    | 22    | 72 | 19:45     |    |    | 18    | 102   | 12    | 52    | 30    | 154 |
| 8:00         |    |    | 11    | 21    | 32    |    | 20:00     |    |    | 23    | 13    | 36    |       |       |     |
| 8:15         |    |    | 10    | 24    | 34    |    | 20:15     |    |    | 17    | 8     | 25    |       |       |     |
| 8:30         |    |    | 9     | 14    | 23    |    | 20:30     |    |    | 16    | 9     | 25    |       |       |     |
| 8:45         |    |    | 10    | 40    | 12    | 71 | 20:45     |    |    | 20    | 76    | 12    | 42    | 32    | 118 |
| 9:00         |    |    | 13    | 20    | 33    |    | 21:00     |    |    | 15    | 6     | 21    |       |       |     |
| 9:15         |    |    | 11    | 18    | 29    |    | 21:15     |    |    | 23    | 5     | 28    |       |       |     |
| 9:30         |    |    | 12    | 18    | 30    |    | 21:30     |    |    | 19    | 7     | 26    |       |       |     |
| 9:45         |    |    | 25    | 61    | 11    | 67 | 21:45     |    |    | 12    | 69    | 2     | 20    | 14    | 89  |
| 10:00        |    |    | 18    | 22    | 40    |    | 22:00     |    |    | 10    | 3     | 13    |       |       |     |
| 10:15        |    |    | 17    | 13    | 30    |    | 22:15     |    |    | 13    | 3     | 16    |       |       |     |
| 10:30        |    |    | 16    | 13    | 29    |    | 22:30     |    |    | 9     | 2     | 11    |       |       |     |
| 10:45        |    |    | 21    | 72    | 32    | 80 | 22:45     |    |    | 4     | 36    | 5     | 13    | 9     | 49  |
| 11:00        |    |    | 20    | 17    | 37    |    | 23:00     |    |    | 8     | 4     | 12    |       |       |     |
| 11:15        |    |    | 23    | 12    | 35    |    | 23:15     |    |    | 9     | 5     | 14    |       |       |     |
| 11:30        |    |    | 18    | 20    | 38    |    | 23:30     |    |    | 7     | 3     | 10    |       |       |     |
| 11:45        |    |    | 21    | 82    | 18    | 67 | 23:45     |    |    | 6     | 30    | 3     | 15    | 9     | 45  |
| TOTALS       |    |    | 520   | 430   | 950   |    | TOTALS    |    |    | 1102  | 753   | 1855  |       |       |     |
| SPLIT %      |    |    | 54.7% | 45.3% | 33.9% |    | SPLIT %   |    |    | 59.4% | 40.6% | 66.1% |       |       |     |

| DAILY TOTALS    |       |       |       |       | NB    | SB |                 |       |       |       |       | EB    | WB    | Total |  |
|-----------------|-------|-------|-------|-------|-------|----|-----------------|-------|-------|-------|-------|-------|-------|-------|--|
|                 |       |       |       |       | 0     | 0  |                 |       |       |       |       | 1,622 | 1,183 | 2,805 |  |
| AM Peak Hour    |       |       | 11:45 | 7:30  | 11:45 |    | PM Peak Hour    |       |       | 16:30 | 16:15 | 16:30 |       |       |  |
| AM Pk Volume    |       |       | 102   | 83    | 181   |    | PM Pk Volume    |       |       | 136   | 122   | 258   |       |       |  |
| Pk Hr Factor    |       |       | 0.823 | 0.865 | 0.808 |    | Pk Hr Factor    |       |       | 0.850 | 0.824 | 0.896 |       |       |  |
| 7 - 9 Volume    | 0     | 0     | 91    | 143   | 234   |    | 4 - 6 Volume    | 0     | 0     | 242   | 236   | 478   |       |       |  |
| 7 - 9 Peak Hour |       |       | 7:15  | 7:30  | 7:15  |    | 4 - 6 Peak Hour |       |       | 16:30 | 16:15 | 16:30 |       |       |  |
| 7 - 9 Pk Volume | 0     | 0     | 55    | 83    | 131   |    | 4 - 6 Pk Volume | 0     | 0     | 136   | 122   | 258   |       |       |  |
| Pk Hr Factor    | 0.000 | 0.000 | 0.809 | 0.865 | 0.936 |    | Pk Hr Factor    | 0.000 | 0.000 | 0.850 | 0.824 | 0.896 |       |       |  |

**VOLUME**

12th Ave Bet. Mall Dr &amp; Glendale Ave

Day: Thursday  
Date: 10/1/2020City: Hanford  
Project #: CA20\_90150\_002

| DAILY TOTALS |       |       |     |      | NB     | SB     |           |       |       |     |      | EB    | WB   | Total  |
|--------------|-------|-------|-----|------|--------|--------|-----------|-------|-------|-----|------|-------|------|--------|
|              |       |       |     |      | 16,391 | 17,139 |           |       |       |     |      | 0     | 0    | 33,530 |
| AM Period    | NB    | SB    | EB  | WB   | TOTAL  |        | PM Period | NB    | SB    | EB  | WB   | TOTAL |      |        |
| 0:00         | 33    | 39    |     |      | 72     |        | 12:00     | 271   | 313   |     |      | 584   |      |        |
| 0:15         | 26    | 26    |     |      | 52     |        | 12:15     | 283   | 267   |     |      | 550   |      |        |
| 0:30         | 13    | 21    |     |      | 34     |        | 12:30     | 296   | 280   |     |      | 576   |      |        |
| 0:45         | 17    | 89    | 22  | 108  | 39     | 197    | 12:45     | 314   | 1164  | 268 | 1128 | 582   | 2292 |        |
| 1:00         | 17    | 39    |     |      | 56     |        | 13:00     | 264   | 293   |     |      | 557   |      |        |
| 1:15         | 14    | 27    |     |      | 41     |        | 13:15     | 260   | 295   |     |      | 555   |      |        |
| 1:30         | 17    | 17    |     |      | 34     |        | 13:30     | 261   | 287   |     |      | 548   |      |        |
| 1:45         | 25    | 73    | 23  | 106  | 48     | 179    | 13:45     | 314   | 1099  | 292 | 1167 | 606   | 2266 |        |
| 2:00         | 17    | 16    |     |      | 33     |        | 14:00     | 241   | 338   |     |      | 579   |      |        |
| 2:15         | 11    | 17    |     |      | 28     |        | 14:15     | 290   | 307   |     |      | 597   |      |        |
| 2:30         | 4     | 15    |     |      | 19     |        | 14:30     | 295   | 304   |     |      | 599   |      |        |
| 2:45         | 17    | 49    | 12  | 60   | 29     | 109    | 14:45     | 298   | 1124  | 312 | 1261 | 610   | 2385 |        |
| 3:00         | 17    | 20    |     |      | 37     |        | 15:00     | 281   | 349   |     |      | 630   |      |        |
| 3:15         | 10    | 6     |     |      | 16     |        | 15:15     | 307   | 317   |     |      | 624   |      |        |
| 3:30         | 23    | 13    |     |      | 36     |        | 15:30     | 314   | 319   |     |      | 633   |      |        |
| 3:45         | 43    | 93    | 17  | 56   | 60     | 149    | 15:45     | 337   | 1239  | 322 | 1307 | 659   | 2546 |        |
| 4:00         | 22    | 30    |     |      | 52     |        | 16:00     | 333   | 350   |     |      | 683   |      |        |
| 4:15         | 29    | 35    |     |      | 64     |        | 16:15     | 310   | 345   |     |      | 655   |      |        |
| 4:30         | 40    | 38    |     |      | 78     |        | 16:30     | 336   | 338   |     |      | 674   |      |        |
| 4:45         | 44    | 135   | 50  | 153  | 94     | 288    | 16:45     | 348   | 1327  | 345 | 1378 | 693   | 2705 |        |
| 5:00         | 54    | 83    |     |      | 137    |        | 17:00     | 355   | 431   |     |      | 786   |      |        |
| 5:15         | 48    | 79    |     |      | 127    |        | 17:15     | 339   | 399   |     |      | 738   |      |        |
| 5:30         | 63    | 92    |     |      | 155    |        | 17:30     | 344   | 343   |     |      | 687   |      |        |
| 5:45         | 102   | 267   | 91  | 345  | 193    | 612    | 17:45     | 303   | 1341  | 350 | 1523 | 653   | 2864 |        |
| 6:00         | 90    | 112   |     |      | 202    |        | 18:00     | 293   | 322   |     |      | 615   |      |        |
| 6:15         | 91    | 89    |     |      | 180    |        | 18:15     | 310   | 327   |     |      | 637   |      |        |
| 6:30         | 112   | 117   |     |      | 229    |        | 18:30     | 295   | 311   |     |      | 606   |      |        |
| 6:45         | 171   | 464   | 128 | 446  | 299    | 910    | 18:45     | 286   | 1184  | 307 | 1267 | 593   | 2451 |        |
| 7:00         | 138   | 137   |     |      | 275    |        | 19:00     | 248   | 310   |     |      | 558   |      |        |
| 7:15         | 202   | 152   |     |      | 354    |        | 19:15     | 203   | 287   |     |      | 490   |      |        |
| 7:30         | 223   | 195   |     |      | 418    |        | 19:30     | 214   | 302   |     |      | 516   |      |        |
| 7:45         | 303   | 866   | 157 | 641  | 460    | 1507   | 19:45     | 198   | 863   | 251 | 1150 | 449   | 2013 |        |
| 8:00         | 216   | 165   |     |      | 381    |        | 20:00     | 160   | 236   |     |      | 396   |      |        |
| 8:15         | 199   | 158   |     |      | 357    |        | 20:15     | 145   | 206   |     |      | 351   |      |        |
| 8:30         | 195   | 125   |     |      | 320    |        | 20:30     | 143   | 221   |     |      | 364   |      |        |
| 8:45         | 220   | 830   | 130 | 578  | 350    | 1408   | 20:45     | 142   | 590   | 164 | 827  | 306   | 1417 |        |
| 9:00         | 176   | 167   |     |      | 343    |        | 21:00     | 89    | 156   |     |      | 245   |      |        |
| 9:15         | 187   | 176   |     |      | 363    |        | 21:15     | 88    | 142   |     |      | 230   |      |        |
| 9:30         | 203   | 173   |     |      | 376    |        | 21:30     | 87    | 142   |     |      | 229   |      |        |
| 9:45         | 233   | 799   | 168 | 684  | 401    | 1483   | 21:45     | 87    | 351   | 103 | 543  | 190   | 894  |        |
| 10:00        | 215   | 163   |     |      | 378    |        | 22:00     | 61    | 115   |     |      | 176   |      |        |
| 10:15        | 242   | 201   |     |      | 443    |        | 22:15     | 57    | 88    |     |      | 145   |      |        |
| 10:30        | 245   | 191   |     |      | 436    |        | 22:30     | 70    | 89    |     |      | 159   |      |        |
| 10:45        | 264   | 966   | 246 | 801  | 510    | 1767   | 22:45     | 51    | 239   | 79  | 371  | 130   | 610  |        |
| 11:00        | 273   | 225   |     |      | 498    |        | 23:00     | 39    | 60    |     |      | 99    |      |        |
| 11:15        | 267   | 242   |     |      | 509    |        | 23:15     | 43    | 55    |     |      | 98    |      |        |
| 11:30        | 296   | 270   |     |      | 566    |        | 23:30     | 32    | 53    |     |      | 85    |      |        |
| 11:45        | 263   | 1099  | 296 | 1033 | 559    | 2132   | 23:45     | 26    | 140   | 38  | 206  | 64    | 346  |        |
| TOTALS       | 5730  | 5011  |     |      | 10741  |        | TOTALS    | 10661 | 12128 |     |      | 22789 |      |        |
| SPLIT %      | 53.3% | 46.7% |     |      | 32.0%  |        | SPLIT %   | 46.8% | 53.2% |     |      | 68.0% |      |        |

| DAILY TOTALS    |       |       |       |       | NB     | SB              |       |       |       |       |       | EB | WB | Total  |
|-----------------|-------|-------|-------|-------|--------|-----------------|-------|-------|-------|-------|-------|----|----|--------|
|                 |       |       |       |       | 16,391 | 17,139          |       |       |       |       |       | 0  | 0  | 33,530 |
| AM Peak Hour    | 11:30 | 11:45 |       |       | 11:45  | PM Peak Hour    | 16:45 | 17:00 |       |       | 16:45 |    |    |        |
| AM Pk Volume    | 1113  | 1156  |       |       | 2269   | PM Pk Volume    | 1386  | 1523  |       |       | 2904  |    |    |        |
| Pk Hr Factor    | 0.940 | 0.923 |       |       | 0.971  | Pk Hr Factor    | 0.976 | 0.883 |       |       | 0.924 |    |    |        |
| 7 - 9 Volume    | 1696  | 1219  | 0     | 0     | 2915   | 4 - 6 Volume    | 2668  | 2901  | 0     | 0     | 5569  |    |    |        |
| 7 - 9 Peak Hour | 7:15  | 7:30  |       |       | 7:30   | 4 - 6 Peak Hour | 16:45 | 17:00 |       |       | 16:45 |    |    |        |
| 7 - 9 Pk Volume | 944   | 675   | 0     | 0     | 1616   | 4 - 6 Pk Volume | 1386  | 1523  | 0     | 0     | 2904  |    |    |        |
| Pk Hr Factor    | 0.779 | 0.865 | 0.000 | 0.000 | 0.878  | Pk Hr Factor    | 0.976 | 0.883 | 0.000 | 0.000 | 0.924 |    |    |        |

**VOLUME**

Grangeville Blvd W/O 12th Ave

Day: Thursday  
Date: 10/1/2020City: Hanford  
Project #: CA20\_90150\_001

| DAILY TOTALS |    |    |       |       | NB    | SB  |           |    |    |       |       | EB    | WB    | Total  |     |  |
|--------------|----|----|-------|-------|-------|-----|-----------|----|----|-------|-------|-------|-------|--------|-----|--|
|              |    |    |       |       | 0     | 0   |           |    |    |       |       | 4,956 | 5,086 | 10,042 |     |  |
| AM Period    | NB | SB | EB    | WB    | TOTAL |     | PM Period | NB | SB | EB    | WB    | TOTAL |       |        |     |  |
| 00:00        |    |    | 4     | 9     | 13    |     | 12:00     |    |    | 85    | 83    | 168   |       |        |     |  |
| 00:15        |    |    | 12    | 12    | 24    |     | 12:15     |    |    | 54    | 63    | 117   |       |        |     |  |
| 00:30        |    |    | 5     | 4     | 9     |     | 12:30     |    |    | 66    | 83    | 149   |       |        |     |  |
| 00:45        |    |    | 4     | 25    | 7     | 32  | 12:45     |    |    | 110   | 315   | 84    | 313   | 194    | 628 |  |
| 01:00        |    |    | 7     | 4     | 11    |     | 13:00     |    |    | 86    | 81    | 167   |       |        |     |  |
| 01:15        |    |    | 8     | 4     | 12    |     | 13:15     |    |    | 80    | 81    | 161   |       |        |     |  |
| 01:30        |    |    | 6     | 2     | 8     |     | 13:30     |    |    | 72    | 75    | 147   |       |        |     |  |
| 01:45        |    |    | 3     | 24    | 2     | 12  | 13:45     |    |    | 70    | 308   | 74    | 311   | 144    | 619 |  |
| 02:00        |    |    | 6     | 4     | 10    |     | 14:00     |    |    | 84    | 81    | 165   |       |        |     |  |
| 02:15        |    |    | 3     | 2     | 5     |     | 14:15     |    |    | 72    | 85    | 157   |       |        |     |  |
| 02:30        |    |    | 3     | 3     | 6     |     | 14:30     |    |    | 103   | 95    | 198   |       |        |     |  |
| 02:45        |    |    | 11    | 23    | 3     | 12  | 14:45     |    |    | 107   | 366   | 78    | 339   | 185    | 705 |  |
| 03:00        |    |    | 3     | 5     | 8     |     | 15:00     |    |    | 94    | 88    | 182   |       |        |     |  |
| 03:15        |    |    | 3     | 5     | 8     |     | 15:15     |    |    | 121   | 81    | 202   |       |        |     |  |
| 03:30        |    |    | 6     | 4     | 10    |     | 15:30     |    |    | 113   | 83    | 196   |       |        |     |  |
| 03:45        |    |    | 12    | 24    | 10    | 24  | 15:45     |    |    | 120   | 448   | 86    | 338   | 206    | 786 |  |
| 04:00        |    |    | 5     | 9     | 14    |     | 16:00     |    |    | 89    | 114   | 203   |       |        |     |  |
| 04:15        |    |    | 4     | 11    | 15    |     | 16:15     |    |    | 113   | 79    | 192   |       |        |     |  |
| 04:30        |    |    | 8     | 8     | 16    |     | 16:30     |    |    | 115   | 105   | 220   |       |        |     |  |
| 04:45        |    |    | 8     | 25    | 27    | 55  | 16:45     |    |    | 127   | 444   | 98    | 396   | 225    | 840 |  |
| 05:00        |    |    | 10    | 28    | 38    |     | 17:00     |    |    | 104   | 119   | 223   |       |        |     |  |
| 05:15        |    |    | 21    | 38    | 59    |     | 17:15     |    |    | 104   | 92    | 196   |       |        |     |  |
| 05:30        |    |    | 23    | 34    | 57    |     | 17:30     |    |    | 106   | 93    | 199   |       |        |     |  |
| 05:45        |    |    | 26    | 80    | 33    | 133 | 17:45     |    |    | 69    | 383   | 100   | 404   | 169    | 787 |  |
| 06:00        |    |    | 25    | 58    | 83    |     | 18:00     |    |    | 73    | 109   | 182   |       |        |     |  |
| 06:15        |    |    | 24    | 54    | 78    |     | 18:15     |    |    | 76    | 76    | 152   |       |        |     |  |
| 06:30        |    |    | 36    | 62    | 98    |     | 18:30     |    |    | 67    | 77    | 144   |       |        |     |  |
| 06:45        |    |    | 37    | 122   | 64    | 238 | 18:45     |    |    | 66    | 282   | 78    | 340   | 144    | 622 |  |
| 07:00        |    |    | 46    | 60    | 106   |     | 19:00     |    |    | 67    | 77    | 144   |       |        |     |  |
| 07:15        |    |    | 66    | 57    | 123   |     | 19:15     |    |    | 79    | 79    | 158   |       |        |     |  |
| 07:30        |    |    | 73    | 72    | 145   |     | 19:30     |    |    | 62    | 52    | 114   |       |        |     |  |
| 07:45        |    |    | 111   | 296   | 103   | 292 | 19:45     |    |    | 57    | 265   | 54    | 262   | 111    | 527 |  |
| 08:00        |    |    | 68    | 86    | 154   |     | 20:00     |    |    | 36    | 54    | 90    |       |        |     |  |
| 08:15        |    |    | 65    | 71    | 136   |     | 20:15     |    |    | 50    | 43    | 93    |       |        |     |  |
| 08:30        |    |    | 70    | 60    | 130   |     | 20:30     |    |    | 40    | 42    | 82    |       |        |     |  |
| 08:45        |    |    | 66    | 269   | 64    | 281 | 20:45     |    |    | 31    | 157   | 32    | 171   | 63     | 328 |  |
| 09:00        |    |    | 60    | 53    | 113   |     | 21:00     |    |    | 34    | 43    | 77    |       |        |     |  |
| 09:15        |    |    | 63    | 65    | 128   |     | 21:15     |    |    | 23    | 48    | 71    |       |        |     |  |
| 09:30        |    |    | 57    | 52    | 109   |     | 21:30     |    |    | 27    | 30    | 57    |       |        |     |  |
| 09:45        |    |    | 66    | 246   | 82    | 252 | 21:45     |    |    | 29    | 113   | 26    | 147   | 55     | 260 |  |
| 10:00        |    |    | 73    | 58    | 131   |     | 22:00     |    |    | 19    | 26    | 45    |       |        |     |  |
| 10:15        |    |    | 68    | 77    | 145   |     | 22:15     |    |    | 14    | 14    | 28    |       |        |     |  |
| 10:30        |    |    | 76    | 64    | 140   |     | 22:30     |    |    | 16    | 15    | 31    |       |        |     |  |
| 10:45        |    |    | 80    | 297   | 78    | 277 | 22:45     |    |    | 19    | 68    | 14    | 69    | 33     | 137 |  |
| 11:00        |    |    | 72    | 80    | 152   |     | 23:00     |    |    | 17    | 22    | 39    |       |        |     |  |
| 11:15        |    |    | 87    | 87    | 174   |     | 23:15     |    |    | 15    | 12    | 27    |       |        |     |  |
| 11:30        |    |    | 64    | 65    | 129   |     | 23:30     |    |    | 23    | 18    | 41    |       |        |     |  |
| 11:45        |    |    | 77    | 300   | 93    | 325 | 23:45     |    |    | 21    | 76    | 11    | 63    | 32     | 139 |  |
| TOTALS       |    |    | 1731  | 1933  | 3664  |     | TOTALS    |    |    | 3225  | 3153  | 6378  |       |        |     |  |
| SPLIT %      |    |    | 47.2% | 52.8% | 36.5% |     | SPLIT %   |    |    | 50.6% | 49.4% | 63.5% |       |        |     |  |

| DAILY TOTALS    |       |       |       |       | NB    | SB |                 |       |       |       |       | EB    | WB    | Total  |  |  |
|-----------------|-------|-------|-------|-------|-------|----|-----------------|-------|-------|-------|-------|-------|-------|--------|--|--|
|                 |       |       |       |       | 0     | 0  |                 |       |       |       |       | 4,956 | 5,086 | 10,042 |  |  |
| AM Peak Hour    |       |       | 07:15 | 07:30 | 07:30 |    | PM Peak Hour    |       |       | 16:15 | 16:30 | 16:30 |       |        |  |  |
| AM Pk Volume    |       |       | 318   | 332   | 649   |    | PM Pk Volume    |       |       | 459   | 414   | 864   |       |        |  |  |
| Pk Hr Factor    |       |       | 0.716 | 0.806 | 0.758 |    | Pk Hr Factor    |       |       | 0.904 | 0.870 | 0.960 |       |        |  |  |
| 7 - 9 Volume    | 0     | 0     | 565   | 573   | 1138  |    | 4 - 6 Volume    | 0     | 0     | 827   | 800   | 1627  |       |        |  |  |
| 7 - 9 Peak Hour |       |       | 07:15 | 07:30 | 07:30 |    | 4 - 6 Peak Hour |       |       | 16:15 | 16:30 | 16:30 |       |        |  |  |
| 7 - 9 Pk Volume | 0     | 0     | 318   | 332   | 649   |    | 4 - 6 Pk Volume | 0     | 0     | 459   | 414   | 864   |       |        |  |  |
| Pk Hr Factor    | 0.000 | 0.000 | 0.716 | 0.806 | 0.758 |    | Pk Hr Factor    | 0.000 | 0.000 | 0.904 | 0.870 | 0.960 |       |        |  |  |



# National Data & Surveying Services

## Intersection Turning Movement Count

**Location:** 11th Ave & 7th St  
**City:** Hanford  
**Control:** Signalized

**Project ID:** Historical  
**Date:** 7/23/2019

### Total

| NS/EW Streets:  |  | 11th Ave            |         |         |         | 11th Ave   |         |         |         | 7th St    |           |           |         | 7th St    |           |           |         |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |
|-----------------|--|---------------------|---------|---------|---------|------------|---------|---------|---------|-----------|-----------|-----------|---------|-----------|-----------|-----------|---------|--------|--|--|--|--------|--|--|--|-------|--|--|--|--------|--|--|--|--------|--|--|--|--------|--|--|--|-------|--|--|--|--------|--|--|--|--------|--|--|--|--------|--|--|--|-------|--|--|--|
| AM              |  | NORTHBOUND          |         |         |         | SOUTHBOUND |         |         |         | EASTBOUND |           |           |         | WESTBOUND |           |           |         |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |
|                 |  | 1<br>NL             | 2<br>NT | 1<br>NR | 0<br>NU | 1<br>SL    | 2<br>ST | 1<br>SR | 0<br>SU | 2<br>EL   | 1.5<br>ET | 0.5<br>ER | 0<br>EU | 1<br>WL   | 1.5<br>WT | 0.5<br>WR | 0<br>WU | TOTAL  |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |
| 7:00 AM         |  | 17                  | 51      | 3       | 0       | 13         | 71      | 4       | 0       | 6         | 10        | 10        | 0       | 18        | 7         | 6         | 0       | 216    |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |
| 7:15 AM         |  | 18                  | 67      | 11      | 5       | 8          | 79      | 7       | 0       | 5         | 19        | 20        | 0       | 10        | 14        | 5         | 0       | 268    |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |
| 7:30 AM         |  | 28                  | 76      | 22      | 1       | 11         | 83      | 8       | 0       | 9         | 20        | 10        | 0       | 14        | 26        | 9         | 0       | 317    |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |
| 7:45 AM         |  | 42                  | 134     | 27      | 6       | 20         | 87      | 21      | 0       | 8         | 20        | 15        | 0       | 7         | 25        | 8         | 0       | 420    |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |
| 8:00 AM         |  | 34                  | 94      | 29      | 2       | 15         | 65      | 15      | 0       | 10        | 17        | 9         | 0       | 22        | 18        | 16        | 0       | 346    |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |
| 8:15 AM         |  | 27                  | 108     | 23      | 1       | 14         | 62      | 14      | 1       | 6         | 21        | 15        | 0       | 18        | 20        | 14        | 0       | 344    |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |
| 8:30 AM         |  | 35                  | 88      | 17      | 4       | 20         | 72      | 13      | 0       | 12        | 29        | 26        | 0       | 25        | 26        | 9         | 0       | 376    |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |
| 8:45 AM         |  | 25                  | 114     | 27      | 1       | 19         | 80      | 16      | 0       | 12        | 26        | 23        | 0       | 23        | 25        | 14        | 0       | 405    |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |
| TOTAL VOLUMES:  |  | NL                  | NT      | NR      | NU      | SL         | ST      | SR      | SU      | EL        | ET        | ER        | EU      | WL        | WT        | WR        | WU      | TOTAL  |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |
| APPROACH %'s:   |  | 226                 | 732     | 159     | 20      | 120        | 599     | 98      | 1       | 68        | 162       | 128       | 0       | 137       | 161       | 81        | 0       | 2692   |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |
| 19.88%          |  | 64.38%              |         |         |         | 13.98%     |         |         |         | 1.76%     |           |           |         | 14.67%    |           |           |         | 73.23% |  |  |  | 11.98% |  |  |  | 0.12% |  |  |  | 18.99% |  |  |  | 45.25% |  |  |  | 35.75% |  |  |  | 0.00% |  |  |  | 36.15% |  |  |  | 42.48% |  |  |  | 21.37% |  |  |  | 0.00% |  |  |  |
| PEAK HR:        |  | 07:45 AM - 08:45 AM |         |         |         |            |         |         |         |           |           |           |         |           |           |           |         | TOTAL  |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |
| PEAK HR VOL:    |  | 138                 | 424     | 96      | 13      | 69         | 286     | 63      | 1       | 36        | 87        | 65        | 0       | 72        | 89        | 47        | 0       | 1486   |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |
| PEAK HR FACTOR: |  | 0.821               | 0.791   | 0.828   | 0.542   | 0.863      | 0.822   | 0.750   | 0.250   | 0.750     | 0.750     | 0.625     | 0.000   | 0.720     | 0.856     | 0.734     | 0.000   | 0.885  |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |
|                 |  | 0.803               |         |         |         | 0.818      |         |         |         | 0.701     |           |           |         | 0.867     |           |           |         |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |

| PM              |  | NORTHBOUND          |         |         |         | SOUTHBOUND |         |         |         | EASTBOUND |           |           |         | WESTBOUND |           |           |         | TOTAL  |  |  |  |       |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |
|-----------------|--|---------------------|---------|---------|---------|------------|---------|---------|---------|-----------|-----------|-----------|---------|-----------|-----------|-----------|---------|--------|--|--|--|-------|--|--|--|-------|--|--|--|--------|--|--|--|--------|--|--|--|--------|--|--|--|-------|--|--|--|--------|--|--|--|--------|--|--|--|--------|--|--|--|-------|--|--|--|
|                 |  | 1<br>NL             | 2<br>NT | 1<br>NR | 0<br>NU | 1<br>SL    | 2<br>ST | 1<br>SR | 0<br>SU | 2<br>EL   | 1.5<br>ET | 0.5<br>ER | 0<br>EU | 1<br>WL   | 1.5<br>WT | 0.5<br>WR | 0<br>WU |        |  |  |  |       |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |
| 4:00 PM         |  | 22                  | 161     | 28      | 4       | 26         | 140     | 15      | 1       | 21        | 36        | 45        | 0       | 39        | 46        | 22        | 0       | 606    |  |  |  |       |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |
| 4:15 PM         |  | 38                  | 142     | 35      | 10      | 19         | 119     | 18      | 4       | 18        | 40        | 34        | 0       | 37        | 38        | 29        | 0       | 581    |  |  |  |       |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |
| 4:30 PM         |  | 32                  | 142     | 33      | 6       | 27         | 120     | 8       | 1       | 21        | 52        | 61        | 0       | 43        | 38        | 30        | 0       | 614    |  |  |  |       |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |
| 4:45 PM         |  | 33                  | 132     | 26      | 7       | 31         | 126     | 12      | 1       | 16        | 43        | 48        | 0       | 37        | 38        | 21        | 0       | 571    |  |  |  |       |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |
| 5:00 PM         |  | 35                  | 156     | 19      | 3       | 23         | 176     | 13      | 3       | 11        | 38        | 72        | 0       | 43        | 45        | 27        | 0       | 664    |  |  |  |       |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |
| 5:15 PM         |  | 38                  | 127     | 29      | 10      | 20         | 152     | 17      | 0       | 18        | 45        | 41        | 0       | 27        | 30        | 23        | 0       | 577    |  |  |  |       |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |
| 5:30 PM         |  | 30                  | 123     | 24      | 5       | 20         | 133     | 4       | 0       | 15        | 39        | 38        | 0       | 36        | 34        | 18        | 0       | 519    |  |  |  |       |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |
| 5:45 PM         |  | 23                  | 128     | 29      | 7       | 12         | 119     | 11      | 2       | 12        | 30        | 32        | 0       | 34        | 32        | 18        | 0       | 489    |  |  |  |       |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |
| TOTAL VOLUMES:  |  | NL                  | NT      | NR      | NU      | SL         | ST      | SR      | SU      | EL        | ET        | ER        | EU      | WL        | WT        | WR        | WU      | TOTAL  |  |  |  |       |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |
| APPROACH %'s:   |  | 2531                | 1111    | 223     | 52      | 178        | 1085    | 98      | 12      | 132       | 323       | 371       | 0       | 296       | 301       | 188       | 0       | 4621   |  |  |  |       |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |
| 15.33%          |  | 67.87%              |         |         |         | 13.62%     |         |         |         | 3.18%     |           |           |         | 12.96%    |           |           |         | 79.02% |  |  |  | 7.14% |  |  |  | 0.87% |  |  |  | 15.98% |  |  |  | 39.10% |  |  |  | 44.92% |  |  |  | 0.00% |  |  |  | 37.71% |  |  |  | 38.34% |  |  |  | 23.95% |  |  |  | 0.00% |  |  |  |
| PEAK HR:        |  | 04:15 PM - 05:15 PM |         |         |         |            |         |         |         |           |           |           |         |           |           |           |         | TOTAL  |  |  |  |       |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |
| PEAK HR VOL:    |  | 138                 | 572     | 113     | 26      | 100        | 541     | 51      | 9       | 66        | 173       | 215       | 0       | 160       | 159       | 107       | 0       | 2430   |  |  |  |       |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |
| PEAK HR FACTOR: |  | 0.908               | 0.917   | 0.807   | 0.650   | 0.806      | 0.768   | 0.708   | 0.563   | 0.786     | 0.832     | 0.747     | 0.000   | 0.930     | 0.883     | 0.892     | 0.000   | 0.915  |  |  |  |       |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |
|                 |  | 0.943               |         |         |         | 0.815      |         |         |         | 0.847     |           |           |         | 0.926     |           |           |         |        |  |  |  |       |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |       |  |  |  |

# National Data & Surveying Services

## Intersection Turning Movement Count

**Location:** S 11th Ave & W 6th St  
**City:** Hanford  
**Control:** 2-Way Stop(EB/WB)

**Project ID:** 20-090149-010  
**Date:** 10/1/2020

### Total

| NS/EW Streets:  |         | S 11th Ave          |            |          |         | S 11th Ave |           |          |         | W 6th St  |         |          |         | W 6th St  |         |          |         |               |
|-----------------|---------|---------------------|------------|----------|---------|------------|-----------|----------|---------|-----------|---------|----------|---------|-----------|---------|----------|---------|---------------|
| AM              |         | NORTHBOUND          |            |          |         | SOUTHBOUND |           |          |         | EASTBOUND |         |          |         | WESTBOUND |         |          |         |               |
|                 |         | 1<br>NL             | 2<br>NT    | 0<br>NR  | 0<br>NU | 1<br>SL    | 2<br>ST   | 1<br>SR  | 0<br>SU | 0<br>EL   | 0<br>ET | 1<br>ER  | 0<br>EU | 0<br>WL   | 0<br>WT | 1<br>WR  | 0<br>WU | TOTAL         |
|                 | 7:00 AM | 10                  | 64         | 3        | 1       | 6          | 89        | 0        | 0       | 0         | 0       | 4        | 0       | 0         | 0       | 8        | 0       | 185           |
|                 | 7:15 AM | 9                   | 91         | 5        | 0       | 9          | 103       | 2        | 0       | 0         | 0       | 5        | 0       | 0         | 0       | 11       | 0       | 235           |
|                 | 7:30 AM | 13                  | 127        | 11       | 0       | 13         | 104       | 1        | 2       | 0         | 0       | 14       | 0       | 0         | 0       | 12       | 0       | 297           |
|                 | 7:45 AM | 26                  | 182        | 15       | 0       | 9          | 99        | 6        | 0       | 0         | 0       | 10       | 0       | 0         | 0       | 9        | 0       | 356           |
|                 | 8:00 AM | 22                  | 147        | 11       | 1       | 20         | 90        | 0        | 0       | 0         | 0       | 12       | 0       | 0         | 0       | 14       | 0       | 317           |
|                 | 8:15 AM | 14                  | 129        | 12       | 0       | 11         | 90        | 4        | 2       | 0         | 0       | 4        | 0       | 0         | 0       | 5        | 0       | 271           |
|                 | 8:30 AM | 15                  | 126        | 12       | 0       | 15         | 99        | 2        | 0       | 0         | 0       | 6        | 0       | 0         | 0       | 20       | 0       | 295           |
|                 | 8:45 AM | 16                  | 154        | 16       | 0       | 20         | 91        | 6        | 0       | 0         | 0       | 18       | 0       | 0         | 0       | 13       | 0       | 334           |
| TOTAL VOLUMES:  |         | NL<br>125           | NT<br>1020 | NR<br>85 | NU<br>2 | SL<br>103  | ST<br>765 | SR<br>21 | SU<br>4 | EL<br>0   | ET<br>0 | ER<br>73 | EU<br>0 | WL<br>0   | WT<br>0 | WR<br>92 | WU<br>0 | TOTAL<br>2290 |
| APPROACH %'s:   |         | 10.15%              | 82.79%     | 6.90%    | 0.16%   | 11.53%     | 85.67%    | 2.35%    | 0.45%   | 0.00%     | 0.00%   | 100.00%  | 0.00%   | 0.00%     | 0.00%   | 100.00%  | 0.00%   |               |
| PEAK HR:        |         | 07:30 AM - 08:30 AM |            |          |         | 53         | 383       | 11       | 4       | 0         | 0       | 40       | 0       | 0         | 0       | 40       | 0       | TOTAL<br>1241 |
| PEAK HR VOL:    |         | 75                  | 585        | 49       | 1       | 53         | 383       | 11       | 4       | 0         | 0       | 40       | 0       | 0         | 0       | 40       | 0       |               |
| PEAK HR FACTOR: |         | 0.721               | 0.804      | 0.817    | 0.250   | 0.663      | 0.921     | 0.458    | 0.500   | 0.000     | 0.000   | 0.714    | 0.000   | 0.000     | 0.000   | 0.714    | 0.000   | 0.871         |
|                 |         | 0.796               |            |          |         | 0.940      |           |          |         | 0.714     |         |          |         | 0.714     |         |          |         |               |

| PM              |         | NORTHBOUND          |            |           |         | SOUTHBOUND |            |          |          | EASTBOUND |         |           |         | WESTBOUND |         |           |         |               |
|-----------------|---------|---------------------|------------|-----------|---------|------------|------------|----------|----------|-----------|---------|-----------|---------|-----------|---------|-----------|---------|---------------|
|                 |         | 1<br>NL             | 2<br>NT    | 0<br>NR   | 0<br>NU | 1<br>SL    | 2<br>ST    | 1<br>SR  | 0<br>SU  | 0<br>EL   | 0<br>ET | 1<br>ER   | 0<br>EU | 0<br>WL   | 0<br>WT | 1<br>WR   | 0<br>WU | TOTAL         |
|                 | 4:00 PM | 11                  | 214        | 11        | 0       | 20         | 215        | 1        | 1        | 0         | 0       | 18        | 0       | 0         | 0       | 35        | 0       | 526           |
|                 | 4:15 PM | 19                  | 216        | 18        | 1       | 17         | 188        | 2        | 1        | 0         | 0       | 14        | 0       | 0         | 0       | 23        | 0       | 499           |
|                 | 4:30 PM | 13                  | 209        | 20        | 0       | 21         | 218        | 1        | 2        | 0         | 0       | 10        | 0       | 0         | 0       | 32        | 0       | 526           |
|                 | 4:45 PM | 24                  | 181        | 18        | 0       | 12         | 202        | 1        | 4        | 0         | 0       | 12        | 0       | 0         | 0       | 34        | 0       | 488           |
|                 | 5:00 PM | 18                  | 180        | 25        | 0       | 25         | 227        | 2        | 0        | 0         | 0       | 16        | 0       | 0         | 0       | 35        | 0       | 528           |
|                 | 5:15 PM | 11                  | 177        | 10        | 0       | 17         | 209        | 2        | 3        | 0         | 0       | 14        | 0       | 0         | 0       | 27        | 0       | 470           |
|                 | 5:30 PM | 12                  | 167        | 12        | 0       | 20         | 193        | 5        | 1        | 0         | 0       | 14        | 0       | 0         | 0       | 17        | 0       | 441           |
|                 | 5:45 PM | 9                   | 167        | 15        | 1       | 16         | 162        | 2        | 1        | 0         | 0       | 4         | 0       | 0         | 0       | 23        | 0       | 400           |
| TOTAL VOLUMES:  |         | NL<br>117           | NT<br>1511 | NR<br>129 | NU<br>2 | SL<br>148  | ST<br>1614 | SR<br>16 | SU<br>13 | EL<br>0   | ET<br>0 | ER<br>102 | EU<br>0 | WL<br>0   | WT<br>0 | WR<br>226 | WU<br>0 | TOTAL<br>3878 |
| APPROACH %'s:   |         | 6.65%               | 85.90%     | 7.33%     | 0.11%   | 8.26%      | 90.12%     | 0.89%    | 0.73%    | 0.00%     | 0.00%   | 100.00%   | 0.00%   | 0.00%     | 0.00%   | 100.00%   | 0.00%   |               |
| PEAK HR:        |         | 04:15 PM - 05:15 PM |            |           |         | 75         | 835        | 6        | 7        | 0         | 0       | 52        | 0       | 0         | 0       | 124       | 0       | TOTAL<br>2041 |
| PEAK HR VOL:    |         | 74                  | 786        | 81        | 1       | 75         | 835        | 6        | 7        | 0         | 0       | 52        | 0       | 0         | 0       | 124       | 0       |               |
| PEAK HR FACTOR: |         | 0.771               | 0.910      | 0.810     | 0.250   | 0.750      | 0.920      | 0.750    | 0.438    | 0.000     | 0.000   | 0.813     | 0.000   | 0.000     | 0.000   | 0.886     | 0.000   | 0.966         |
|                 |         | 0.927               |            |           |         | 0.908      |            |          |          | 0.813     |         |           |         | 0.886     |         |           |         |               |

# National Data & Surveying Services

## Intersection Turning Movement Count

**Location:** S 11th Ave & W 5th St  
**City:** Hanford  
**Control:** Signalized

**Project ID:** 20-090149-009  
**Date:** 10/1/2020

### Total

| NS/EW Streets:   |  | S 11th Ave          |         |         |         | S 11th Ave |         |         |         | W 5th St  |         |         |         | W 5th St  |         |         |         |       |
|------------------|--|---------------------|---------|---------|---------|------------|---------|---------|---------|-----------|---------|---------|---------|-----------|---------|---------|---------|-------|
| AM               |  | NORTHBOUND          |         |         |         | SOUTHBOUND |         |         |         | EASTBOUND |         |         |         | WESTBOUND |         |         |         | TOTAL |
|                  |  | 1<br>NL             | 2<br>NT | 0<br>NR | 0<br>NU | 1<br>SL    | 2<br>ST | 1<br>SR | 0<br>SU | 1<br>EL   | 0<br>ET | 1<br>ER | 0<br>EU | 0<br>WL   | 1<br>WT | 0<br>WR | 0<br>WU |       |
| 7:00 AM          |  | 5                   | 74      | 0       | 0       | 0          | 84      | 8       | 0       | 3         | 0       | 1       | 0       | 0         | 0       | 0       | 0       | 175   |
| 7:15 AM          |  | 5                   | 105     | 3       | 0       | 2          | 97      | 11      | 0       | 2         | 0       | 1       | 0       | 0         | 0       | 0       | 0       | 226   |
| 7:30 AM          |  | 4                   | 146     | 5       | 0       | 1          | 113     | 2       | 0       | 3         | 0       | 3       | 0       | 1         | 0       | 0       | 0       | 278   |
| 7:45 AM          |  | 3                   | 220     | 6       | 0       | 0          | 103     | 8       | 0       | 3         | 0       | 0       | 0       | 1         | 0       | 0       | 0       | 344   |
| 8:00 AM          |  | 9                   | 179     | 4       | 0       | 0          | 95      | 8       | 0       | 4         | 0       | 1       | 0       | 1         | 0       | 2       | 0       | 303   |
| 8:15 AM          |  | 4                   | 145     | 3       | 0       | 0          | 76      | 18      | 0       | 6         | 0       | 1       | 0       | 0         | 0       | 2       | 0       | 255   |
| 8:30 AM          |  | 7                   | 143     | 0       | 0       | 1          | 96      | 5       | 0       | 7         | 0       | 1       | 0       | 2         | 0       | 1       | 0       | 263   |
| 8:45 AM          |  | 11                  | 179     | 2       | 0       | 2          | 102     | 8       | 0       | 8         | 0       | 2       | 0       | 1         | 1       | 1       | 0       | 317   |
| TOTAL VOLUMES :  |  | NL                  | NT      | NR      | NU      | SL         | ST      | SR      | SU      | EL        | ET      | ER      | EU      | WL        | WT      | WR      | WU      | TOTAL |
| APPROACH %'s :   |  | 48                  | 1191    | 23      | 0       | 6          | 766     | 68      | 0       | 36        | 0       | 10      | 0       | 6         | 1       | 6       | 0       | 2161  |
|                  |  | 3.80%               | 94.37%  | 1.82%   | 0.00%   | 0.71%      | 91.19%  | 8.10%   | 0.00%   | 78.26%    | 0.00%   | 21.74%  | 0.00%   | 46.15%    | 7.69%   | 46.15%  | 0.00%   |       |
| PEAK HR :        |  | 07:30 AM - 08:30 AM |         |         |         |            |         |         |         |           |         |         |         |           |         |         |         | TOTAL |
| PEAK HR VOL :    |  | 20                  | 690     | 18      | 0       | 1          | 387     | 36      | 0       | 16        | 0       | 5       | 0       | 3         | 0       | 4       | 0       | 1180  |
| PEAK HR FACTOR : |  | 0.556               | 0.784   | 0.750   | 0.000   | 0.250      | 0.856   | 0.500   | 0.000   | 0.667     | 0.000   | 0.417   | 0.000   | 0.750     | 0.000   | 0.500   | 0.000   | 0.858 |
|                  |  | 0.795               |         |         |         | 0.914      |         |         |         | 0.750     |         |         |         | 0.583     |         |         |         |       |

| PM               |  | NORTHBOUND          |         |         |         | SOUTHBOUND |         |         |         | EASTBOUND |         |         |         | WESTBOUND |         |         |         | TOTAL |
|------------------|--|---------------------|---------|---------|---------|------------|---------|---------|---------|-----------|---------|---------|---------|-----------|---------|---------|---------|-------|
|                  |  | 1<br>NL             | 2<br>NT | 0<br>NR | 0<br>NU | 1<br>SL    | 2<br>ST | 1<br>SR | 0<br>SU | 1<br>EL   | 0<br>ET | 1<br>ER | 0<br>EU | 0<br>WL   | 1<br>WT | 0<br>WR | 0<br>WU |       |
| 4:00 PM          |  | 25                  | 204     | 2       | 0       | 1          | 208     | 28      | 1       | 31        | 0       | 6       | 0       | 1         | 0       | 2       | 0       | 509   |
| 4:15 PM          |  | 28                  | 210     | 1       | 1       | 1          | 166     | 26      | 3       | 36        | 0       | 10      | 0       | 2         | 0       | 3       | 0       | 487   |
| 4:30 PM          |  | 26                  | 214     | 0       | 0       | 0          | 210     | 19      | 2       | 28        | 0       | 8       | 0       | 6         | 0       | 0       | 0       | 513   |
| 4:45 PM          |  | 35                  | 205     | 0       | 1       | 0          | 186     | 24      | 0       | 13        | 0       | 7       | 0       | 0         | 0       | 1       | 0       | 472   |
| 5:00 PM          |  | 31                  | 195     | 1       | 2       | 0          | 217     | 25      | 0       | 29        | 0       | 8       | 0       | 0         | 0       | 4       | 0       | 512   |
| 5:15 PM          |  | 19                  | 178     | 0       | 0       | 1          | 208     | 20      | 0       | 18        | 0       | 9       | 0       | 3         | 0       | 0       | 0       | 456   |
| 5:30 PM          |  | 29                  | 168     | 0       | 1       | 0          | 189     | 19      | 1       | 24        | 0       | 14      | 0       | 3         | 0       | 1       | 0       | 449   |
| 5:45 PM          |  | 26                  | 172     | 0       | 0       | 0          | 153     | 12      | 0       | 16        | 0       | 7       | 0       | 1         | 0       | 1       | 0       | 388   |
| TOTAL VOLUMES :  |  | NL                  | NT      | NR      | NU      | SL         | ST      | SR      | SU      | EL        | ET      | ER      | EU      | WL        | WT      | WR      | WU      | TOTAL |
| APPROACH %'s :   |  | 219                 | 1546    | 4       | 5       | 3          | 1537    | 173     | 7       | 195       | 0       | 69      | 0       | 16        | 0       | 12      | 0       | 3786  |
|                  |  | 12.34%              | 87.15%  | 0.23%   | 0.28%   | 0.17%      | 89.36%  | 10.06%  | 0.41%   | 73.86%    | 0.00%   | 26.14%  | 0.00%   | 57.14%    | 0.00%   | 42.86%  | 0.00%   |       |
| PEAK HR :        |  | 04:15 PM - 05:15 PM |         |         |         |            |         |         |         |           |         |         |         |           |         |         |         | TOTAL |
| PEAK HR VOL :    |  | 120                 | 824     | 2       | 4       | 1          | 779     | 94      | 5       | 106       | 0       | 33      | 0       | 8         | 0       | 8       | 0       | 1984  |
| PEAK HR FACTOR : |  | 0.857               | 0.963   | 0.500   | 0.500   | 0.250      | 0.897   | 0.904   | 0.417   | 0.736     | 0.000   | 0.825   | 0.000   | 0.333     | 0.000   | 0.500   | 0.000   | 0.967 |
|                  |  | 0.985               |         |         |         | 0.908      |         |         |         | 0.755     |         |         |         | 0.667     |         |         |         |       |

## National Data &amp; Surveying Services

## Intersection Turning Movement Count

Location: S 11th Ave &amp; SR 198 WB On Ramp/W 4th St

City: Hanford

Control: Signalized

Project ID: 20-090149-008

Date: 10/1/2020

## Total

| NS/EW Streets:   | S 11th Ave          |         |         |         | S 11th Ave |         |         |         | SR 198 WB On Ramp/W 4th St |         |         |         | SR 198 WB On Ramp/W 4th St |         |         |         |       |
|------------------|---------------------|---------|---------|---------|------------|---------|---------|---------|----------------------------|---------|---------|---------|----------------------------|---------|---------|---------|-------|
| AM               | NORTHBOUND          |         |         |         | SOUTHBOUND |         |         |         | EASTBOUND                  |         |         |         | WESTBOUND                  |         |         |         | TOTAL |
|                  | 1<br>NL             | 2<br>NT | 0<br>NR | 0<br>NU | 0<br>SL    | 2<br>ST | 1<br>SR | 0<br>SU | 0<br>EL                    | 0<br>ET | 0<br>ER | 0<br>EU | 1<br>WL                    | 1<br>WT | 1<br>WR | 0<br>WU |       |
| 7:00 AM          | 13                  | 68      | 0       | 0       | 0          | 56      | 34      | 0       | 0                          | 0       | 0       | 0       | 13                         | 5       | 14      | 0       | 203   |
| 7:15 AM          | 5                   | 82      | 0       | 1       | 0          | 64      | 33      | 0       | 0                          | 0       | 0       | 0       | 30                         | 1       | 27      | 0       | 243   |
| 7:30 AM          | 13                  | 109     | 0       | 0       | 0          | 83      | 43      | 0       | 0                          | 0       | 0       | 0       | 18                         | 1       | 51      | 0       | 318   |
| 7:45 AM          | 10                  | 173     | 0       | 0       | 0          | 77      | 21      | 0       | 0                          | 0       | 0       | 0       | 39                         | 1       | 55      | 0       | 376   |
| 8:00 AM          | 7                   | 151     | 0       | 1       | 0          | 76      | 33      | 0       | 0                          | 0       | 0       | 0       | 23                         | 2       | 38      | 0       | 331   |
| 8:15 AM          | 9                   | 133     | 0       | 0       | 0          | 57      | 28      | 0       | 0                          | 0       | 0       | 0       | 11                         | 8       | 24      | 0       | 270   |
| 8:30 AM          | 6                   | 125     | 0       | 0       | 0          | 80      | 22      | 0       | 0                          | 0       | 0       | 0       | 18                         | 9       | 23      | 0       | 283   |
| 8:45 AM          | 4                   | 161     | 0       | 0       | 0          | 84      | 26      | 0       | 0                          | 0       | 0       | 0       | 28                         | 3       | 32      | 0       | 338   |
| TOTAL VOLUMES :  | NL                  | NT      | NR      | NU      | SL         | ST      | SR      | SU      | EL                         | ET      | ER      | EU      | WL                         | WT      | WR      | WU      | TOTAL |
| APPROACH %'s :   | 67                  | 1002    | 0       | 2       | 0          | 577     | 240     | 0       | 0                          | 0       | 0       | 0       | 180                        | 30      | 264     | 0       | 2362  |
|                  | 6.26%               | 93.56%  | 0.00%   | 0.19%   | 0.00%      | 70.62%  | 29.38%  | 0.00%   |                            |         |         |         | 37.97%                     | 6.33%   | 55.70%  | 0.00%   |       |
| PEAK HR :        | 07:30 AM - 08:30 AM |         |         |         |            |         |         |         |                            |         |         |         |                            |         |         |         | TOTAL |
| PEAK HR VOL :    | 39                  | 566     | 0       | 1       | 0          | 293     | 125     | 0       | 0                          | 0       | 0       | 0       | 91                         | 12      | 168     | 0       | 1295  |
| PEAK HR FACTOR : | 0.750               | 0.818   | 0.000   | 0.250   | 0.000      | 0.883   | 0.727   | 0.000   | 0.000                      | 0.000   | 0.000   | 0.000   | 0.583                      | 0.375   | 0.764   | 0.000   | 0.861 |
|                  |                     |         | 0.828   |         |            |         | 0.829   |         |                            |         |         |         |                            |         | 0.713   |         |       |
| PM               | NORTHBOUND          |         |         |         | SOUTHBOUND |         |         |         | EASTBOUND                  |         |         |         | WESTBOUND                  |         |         |         | TOTAL |
|                  | 1<br>NL             | 2<br>NT | 0<br>NR | 0<br>NU | 0<br>SL    | 2<br>ST | 1<br>SR | 0<br>SU | 0<br>EL                    | 0<br>ET | 0<br>ER | 0<br>EU | 1<br>WL                    | 1<br>WT | 1<br>WR | 0<br>WU |       |
| 4:00 PM          | 10                  | 198     | 0       | 0       | 0          | 163     | 58      | 0       | 0                          | 0       | 0       | 0       | 45                         | 8       | 36      | 0       | 518   |
| 4:15 PM          | 14                  | 195     | 0       | 0       | 0          | 154     | 37      | 0       | 0                          | 0       | 0       | 0       | 53                         | 8       | 43      | 0       | 504   |
| 4:30 PM          | 17                  | 203     | 0       | 0       | 0          | 171     | 63      | 0       | 0                          | 0       | 0       | 0       | 40                         | 5       | 33      | 0       | 532   |
| 4:45 PM          | 15                  | 202     | 0       | 0       | 0          | 156     | 55      | 0       | 0                          | 0       | 0       | 0       | 34                         | 9       | 38      | 0       | 509   |
| 5:00 PM          | 23                  | 194     | 0       | 1       | 0          | 191     | 58      | 0       | 0                          | 0       | 0       | 0       | 41                         | 5       | 37      | 0       | 550   |
| 5:15 PM          | 10                  | 171     | 0       | 0       | 0          | 187     | 50      | 0       | 0                          | 0       | 0       | 0       | 44                         | 11      | 28      | 0       | 501   |
| 5:30 PM          | 15                  | 163     | 0       | 0       | 0          | 156     | 38      | 0       | 0                          | 0       | 0       | 0       | 43                         | 8       | 33      | 0       | 456   |
| 5:45 PM          | 12                  | 169     | 0       | 0       | 0          | 127     | 40      | 0       | 0                          | 0       | 0       | 0       | 44                         | 5       | 33      | 0       | 430   |
| TOTAL VOLUMES :  | NL                  | NT      | NR      | NU      | SL         | ST      | SR      | SU      | EL                         | ET      | ER      | EU      | WL                         | WT      | WR      | WU      | TOTAL |
| APPROACH %'s :   | 116                 | 1495    | 0       | 1       | 0          | 1305    | 399     | 0       | 0                          | 0       | 0       | 0       | 344                        | 59      | 281     | 0       | 4000  |
|                  | 7.20%               | 92.74%  | 0.00%   | 0.06%   | 0.00%      | 76.58%  | 23.42%  | 0.00%   |                            |         |         |         | 50.29%                     | 8.63%   | 41.08%  | 0.00%   |       |
| PEAK HR :        | 04:15 PM - 05:15 PM |         |         |         |            |         |         |         |                            |         |         |         |                            |         |         |         | TOTAL |
| PEAK HR VOL :    | 69                  | 794     | 0       | 1       | 0          | 672     | 213     | 0       | 0                          | 0       | 0       | 0       | 168                        | 27      | 151     | 0       | 2095  |
| PEAK HR FACTOR : | 0.750               | 0.978   | 0.000   | 0.250   | 0.000      | 0.880   | 0.845   | 0.000   | 0.000                      | 0.000   | 0.000   | 0.000   | 0.792                      | 0.750   | 0.878   | 0.000   | 0.952 |
|                  |                     |         | 0.982   |         |            |         | 0.889   |         |                            |         |         |         |                            |         | 0.832   |         |       |

## National Data &amp; Surveying Services

## Intersection Turning Movement Count

Location: S 11th Ave &amp; SR 198 EB Off Ramp/W 3rd St

City: Hanford

Control: Signalized

Project ID: 20-090149-007

Date: 10/1/2020

## Total

| NS/EW Streets:   | S 11th Ave          |         |         |         | S 11th Ave |         |         |         | SR 198 EB Off Ramp/W 3rd St |         |         |         | SR 198 EB Off Ramp/W 3rd St |         |         |         |       |
|------------------|---------------------|---------|---------|---------|------------|---------|---------|---------|-----------------------------|---------|---------|---------|-----------------------------|---------|---------|---------|-------|
| AM               | NORTHBOUND          |         |         |         | SOUTHBOUND |         |         |         | EASTBOUND                   |         |         |         | WESTBOUND                   |         |         |         | TOTAL |
|                  | 0<br>NL             | 2<br>NT | 1<br>NR | 0<br>NU | 1<br>SL    | 2<br>ST | 0<br>SR | 0<br>SU | 0<br>EL                     | 1<br>ET | 1<br>ER | 0<br>EU | 0<br>WL                     | 0<br>WT | 0<br>WR | 0<br>WU |       |
| 7:00 AM          | 0                   | 59      | 24      | 0       | 14         | 51      | 0       | 0       | 23                          | 14      | 3       | 0       | 0                           | 0       | 0       | 0       | 188   |
| 7:15 AM          | 0                   | 59      | 23      | 0       | 12         | 86      | 0       | 0       | 25                          | 21      | 6       | 0       | 0                           | 0       | 0       | 0       | 232   |
| 7:30 AM          | 0                   | 85      | 28      | 0       | 15         | 83      | 0       | 1       | 37                          | 26      | 14      | 0       | 0                           | 0       | 0       | 0       | 289   |
| 7:45 AM          | 0                   | 131     | 32      | 0       | 19         | 100     | 0       | 0       | 57                          | 38      | 22      | 0       | 0                           | 0       | 0       | 0       | 399   |
| 8:00 AM          | 0                   | 104     | 23      | 0       | 12         | 83      | 0       | 0       | 50                          | 22      | 16      | 0       | 0                           | 0       | 0       | 0       | 310   |
| 8:15 AM          | 0                   | 102     | 20      | 0       | 16         | 57      | 0       | 0       | 41                          | 22      | 13      | 0       | 0                           | 0       | 0       | 0       | 271   |
| 8:30 AM          | 0                   | 84      | 27      | 0       | 22         | 76      | 0       | 0       | 46                          | 18      | 11      | 0       | 0                           | 0       | 0       | 0       | 284   |
| 8:45 AM          | 0                   | 109     | 30      | 0       | 26         | 84      | 0       | 0       | 60                          | 22      | 11      | 0       | 0                           | 0       | 0       | 0       | 342   |
| TOTAL VOLUMES :  | NL                  | NT      | NR      | NU      | SL         | ST      | SR      | SU      | EL                          | ET      | ER      | EU      | WL                          | WT      | WR      | WU      | TOTAL |
| APPROACH %'s :   | 0                   | 733     | 207     | 0       | 136        | 620     | 0       | 1       | 339                         | 183     | 96      | 0       | 0                           | 0       | 0       | 0       | 2315  |
|                  | 0.00%               | 77.98%  | 22.02%  | 0.00%   | 17.97%     | 81.90%  | 0.00%   | 0.13%   | 54.85%                      | 29.61%  | 15.53%  | 0.00%   |                             |         |         |         |       |
| PEAK HR :        | 07:30 AM - 08:30 AM |         |         |         | 62         | 323     | 0       | 1       | 185                         | 108     | 65      | 0       | 0                           | 0       | 0       | 0       | TOTAL |
| PEAK HR VOL :    | 0                   | 422     | 103     | 0       | 62         | 323     | 0       | 1       | 185                         | 108     | 65      | 0       | 0                           | 0       | 0       | 0       | 1269  |
| PEAK HR FACTOR : | 0.000               | 0.805   | 0.805   | 0.000   | 0.816      | 0.808   | 0.000   | 0.250   | 0.811                       | 0.711   | 0.739   | 0.000   | 0.000                       | 0.000   | 0.000   | 0.000   | 0.795 |
|                  |                     |         | 0.805   |         |            |         | 0.811   |         |                             |         | 0.765   |         |                             |         |         |         |       |
| PM               | NORTHBOUND          |         |         |         | SOUTHBOUND |         |         |         | EASTBOUND                   |         |         |         | WESTBOUND                   |         |         |         | TOTAL |
|                  | 0<br>NL             | 2<br>NT | 1<br>NR | 0<br>NU | 1<br>SL    | 2<br>ST | 0<br>SR | 0<br>SU | 0<br>EL                     | 1<br>ET | 1<br>ER | 0<br>EU | 0<br>WL                     | 0<br>WT | 0<br>WR | 0<br>WU |       |
| 4:00 PM          | 0                   | 146     | 45      | 0       | 42         | 163     | 0       | 0       | 59                          | 8       | 18      | 0       | 0                           | 0       | 0       | 0       | 481   |
| 4:15 PM          | 0                   | 133     | 38      | 0       | 47         | 163     | 0       | 0       | 79                          | 23      | 19      | 0       | 0                           | 0       | 0       | 0       | 502   |
| 4:30 PM          | 0                   | 152     | 35      | 0       | 57         | 153     | 0       | 1       | 65                          | 17      | 16      | 0       | 0                           | 0       | 0       | 0       | 496   |
| 4:45 PM          | 0                   | 148     | 42      | 0       | 47         | 141     | 0       | 0       | 68                          | 12      | 13      | 0       | 0                           | 0       | 0       | 0       | 471   |
| 5:00 PM          | 0                   | 148     | 41      | 0       | 65         | 170     | 0       | 0       | 72                          | 9       | 10      | 0       | 0                           | 0       | 0       | 0       | 515   |
| 5:15 PM          | 0                   | 118     | 37      | 0       | 46         | 184     | 0       | 0       | 61                          | 16      | 16      | 0       | 0                           | 0       | 0       | 0       | 478   |
| 5:30 PM          | 0                   | 126     | 33      | 0       | 39         | 160     | 0       | 1       | 53                          | 8       | 9       | 0       | 0                           | 0       | 0       | 0       | 429   |
| 5:45 PM          | 0                   | 131     | 25      | 0       | 24         | 144     | 0       | 0       | 53                          | 8       | 10      | 0       | 0                           | 0       | 0       | 0       | 395   |
| TOTAL VOLUMES :  | NL                  | NT      | NR      | NU      | SL         | ST      | SR      | SU      | EL                          | ET      | ER      | EU      | WL                          | WT      | WR      | WU      | TOTAL |
| APPROACH %'s :   | 0                   | 1102    | 296     | 0       | 367        | 1278    | 0       | 2       | 510                         | 101     | 111     | 0       | 0                           | 0       | 0       | 0       | 3767  |
|                  | 0.00%               | 78.83%  | 21.17%  | 0.00%   | 22.28%     | 77.60%  | 0.00%   | 0.12%   | 70.64%                      | 13.99%  | 15.37%  | 0.00%   |                             |         |         |         |       |
| PEAK HR :        | 04:15 PM - 05:15 PM |         |         |         | 216        | 627     | 0       | 1       | 284                         | 61      | 58      | 0       | 0                           | 0       | 0       | 0       | TOTAL |
| PEAK HR VOL :    | 0                   | 581     | 156     | 0       | 216        | 627     | 0       | 1       | 284                         | 61      | 58      | 0       | 0                           | 0       | 0       | 0       | 1984  |
| PEAK HR FACTOR : | 0.000               | 0.956   | 0.929   | 0.000   | 0.831      | 0.922   | 0.000   | 0.250   | 0.899                       | 0.663   | 0.763   | 0.000   | 0.000                       | 0.000   | 0.000   | 0.000   | 0.963 |
|                  |                     |         | 0.970   |         |            |         | 0.898   |         |                             |         | 0.833   |         |                             |         |         |         |       |

## National Data &amp; Surveying Services

## Intersection Turning Movement Count

Location: 12th Ave &amp; SR 198 EB Off/On Ramps

City: Hanford

Control: Signalized

Project ID: 20-090149-006

Date: 10/1/2020

## Total

| NS/EW Streets:  |       | 12th Ave            |        |        |       | 12th Ave   |        |        |       | SR 198 EB Off/On Ramps |       |       |       | SR 198 EB Off/On Ramps |       |       |       |       |
|-----------------|-------|---------------------|--------|--------|-------|------------|--------|--------|-------|------------------------|-------|-------|-------|------------------------|-------|-------|-------|-------|
| AM              |       | NORTHBOUND          |        |        |       | SOUTHBOUND |        |        |       | EASTBOUND              |       |       |       | WESTBOUND              |       |       |       |       |
|                 |       | 0                   | 2      | 1      | 0     | 0          | 2      | 1      | 0     | 2                      | 0     | 1     | 0     | 0                      | 0     | 0     | 0     |       |
|                 |       | NL                  | NT     | NR     | NU    | SL         | ST     | SR     | SU    | EL                     | ET    | ER    | EU    | WL                     | WT    | WR    | WU    | TOTAL |
| 7:00 AM         | 0     | 54                  | 23     | 0      | 0     | 39         | 34     | 0      | 28    | 0                      | 3     | 0     | 0     | 0                      | 0     | 0     | 0     | 181   |
| 7:15 AM         | 0     | 84                  | 16     | 0      | 0     | 57         | 51     | 0      | 62    | 0                      | 2     | 0     | 0     | 0                      | 0     | 0     | 0     | 272   |
| 7:30 AM         | 0     | 81                  | 26     | 0      | 0     | 75         | 61     | 0      | 54    | 0                      | 5     | 0     | 0     | 0                      | 0     | 0     | 0     | 302   |
| 7:45 AM         | 0     | 100                 | 27     | 0      | 0     | 53         | 35     | 0      | 106   | 0                      | 2     | 0     | 0     | 0                      | 0     | 0     | 0     | 323   |
| 8:00 AM         | 0     | 88                  | 17     | 0      | 0     | 53         | 44     | 0      | 56    | 0                      | 0     | 0     | 0     | 0                      | 0     | 0     | 0     | 258   |
| 8:15 AM         | 0     | 66                  | 24     | 0      | 0     | 68         | 42     | 0      | 79    | 0                      | 5     | 0     | 0     | 0                      | 0     | 0     | 0     | 284   |
| 8:30 AM         | 0     | 77                  | 9      | 0      | 0     | 47         | 39     | 0      | 59    | 0                      | 4     | 0     | 0     | 0                      | 0     | 0     | 0     | 235   |
| 8:45 AM         | 0     | 81                  | 22     | 0      | 0     | 60         | 37     | 0      | 63    | 0                      | 1     | 0     | 0     | 0                      | 0     | 0     | 0     | 264   |
|                 |       |                     |        |        |       |            |        |        |       |                        |       |       |       |                        |       |       |       |       |
| TOTAL VOLUMES:  |       | NL                  | NT     | NR     | NU    | SL         | ST     | SR     | SU    | EL                     | ET    | ER    | EU    | WL                     | WT    | WR    | WU    | TOTAL |
| APPROACH %'s:   | 0.00% | 0                   | 631    | 164    | 0     | 0          | 452    | 343    | 0     | 507                    | 0     | 22    | 0     | 0                      | 0     | 0     | 0     | 2119  |
|                 |       |                     | 79.37% | 20.63% | 0.00% | 0.00%      | 56.86% | 43.14% | 0.00% | 95.84%                 | 0.00% | 4.16% | 0.00% |                        |       |       |       |       |
| PEAK HR:        |       | 07:30 AM - 08:30 AM |        |        |       |            |        |        |       |                        |       |       |       |                        |       |       |       | TOTAL |
| PEAK HR VOL:    | 0     | 335                 | 94     | 0      | 0     | 249        | 182    | 0      | 295   | 0                      | 12    | 0     | 0     | 0                      | 0     | 0     | 0     | 1167  |
| PEAK HR FACTOR: | 0.000 | 0.838               | 0.870  | 0.000  | 0.000 | 0.830      | 0.746  | 0.000  | 0.696 | 0.000                  | 0.600 | 0.000 | 0.000 | 0.000                  | 0.000 | 0.000 | 0.000 | 0.903 |
|                 |       | 0.844               |        |        |       | 0.792      |        |        |       | 0.711                  |       |       |       |                        |       |       |       |       |

| PM              |       | NORTHBOUND          |        |        |       | SOUTHBOUND |        |        |       | EASTBOUND |       |       |       | WESTBOUND |       |       |       | TOTAL |
|-----------------|-------|---------------------|--------|--------|-------|------------|--------|--------|-------|-----------|-------|-------|-------|-----------|-------|-------|-------|-------|
|                 |       | 0                   | 2      | 1      | 0     | 0          | 2      | 1      | 0     | 2         | 0     | 1     | 0     | 0         | 0     | 0     | 0     |       |
|                 |       | NL                  | NT     | NR     | NU    | SL         | ST     | SR     | SU    | EL        | ET    | ER    | EU    | WL        | WT    | WR    | WU    |       |
| 4:00 PM         | 0     | 119                 | 29     | 0      | 0     | 156        | 101    | 0      | 130   | 0         | 7     | 0     | 0     | 0         | 0     | 0     | 0     | 542   |
| 4:15 PM         | 0     | 121                 | 28     | 0      | 0     | 147        | 87     | 0      | 123   | 0         | 10    | 0     | 0     | 0         | 0     | 0     | 0     | 516   |
| 4:30 PM         | 0     | 114                 | 34     | 0      | 0     | 145        | 107    | 0      | 109   | 0         | 7     | 0     | 0     | 0         | 0     | 0     | 0     | 516   |
| 4:45 PM         | 0     | 130                 | 30     | 0      | 0     | 152        | 76     | 0      | 115   | 0         | 14    | 0     | 0     | 0         | 0     | 0     | 0     | 517   |
| 5:00 PM         | 0     | 133                 | 23     | 0      | 0     | 184        | 138    | 0      | 104   | 0         | 10    | 0     | 0     | 0         | 0     | 0     | 0     | 592   |
| 5:15 PM         | 0     | 131                 | 23     | 0      | 0     | 197        | 105    | 0      | 111   | 0         | 7     | 0     | 0     | 0         | 0     | 0     | 0     | 574   |
| 5:30 PM         | 0     | 128                 | 26     | 0      | 0     | 168        | 81     | 0      | 100   | 0         | 10    | 0     | 0     | 0         | 0     | 0     | 0     | 513   |
| 5:45 PM         | 0     | 119                 | 21     | 0      | 0     | 155        | 79     | 0      | 87    | 0         | 3     | 0     | 0     | 0         | 0     | 0     | 0     | 464   |
|                 |       |                     |        |        |       |            |        |        |       |           |       |       |       |           |       |       |       |       |
| TOTAL VOLUMES:  |       | NL                  | NT     | NR     | NU    | SL         | ST     | SR     | SU    | EL        | ET    | ER    | EU    | WL        | WT    | WR    | WU    | TOTAL |
| APPROACH %'s:   | 0.00% | 0                   | 995    | 214    | 0     | 0          | 1304   | 774    | 0     | 879       | 0     | 68    | 0     | 0         | 0     | 0     | 0     | 4234  |
|                 |       |                     | 82.30% | 17.70% | 0.00% | 0.00%      | 62.75% | 37.25% | 0.00% | 92.82%    | 0.00% | 7.18% | 0.00% |           |       |       |       |       |
| PEAK HR:        |       | 04:30 PM - 05:30 PM |        |        |       |            |        |        |       |           |       |       |       |           |       |       |       | TOTAL |
| PEAK HR VOL:    | 0     | 508                 | 110    | 0      | 0     | 678        | 426    | 0      | 439   | 0         | 38    | 0     | 0     | 0         | 0     | 0     | 0     | 2199  |
| PEAK HR FACTOR: | 0.000 | 0.955               | 0.809  | 0.000  | 0.000 | 0.860      | 0.772  | 0.000  | 0.954 | 0.000     | 0.679 | 0.000 | 0.000 | 0.000     | 0.000 | 0.000 | 0.000 | 0.929 |
|                 |       | 0.966               |        |        |       | 0.857      |        |        |       | 0.924     |       |       |       |           |       |       |       |       |

## Intersection Turning Movement Count

**Project ID:** 20-090149-005  
**Date:** 10/1/2020

**Total**

| NS/EW Streets:                  |  | 12th Ave            |         |         |         | 12th Ave   |         |         |         | SR 198 WB On/Off Ramps |         |         |         | SR 198 WB On/Off Ramps |         |           |         |       |
|---------------------------------|--|---------------------|---------|---------|---------|------------|---------|---------|---------|------------------------|---------|---------|---------|------------------------|---------|-----------|---------|-------|
| AM                              |  | NORTHBOUND          |         |         |         | SOUTHBOUND |         |         |         | EASTBOUND              |         |         |         | WESTBOUND              |         |           |         | TOTAL |
|                                 |  | 1<br>NL             | 2<br>NT | 0<br>NR | 0<br>NU | 0<br>SL    | 3<br>ST | 1<br>SR | 0<br>SU | 0<br>EL                | 0<br>ET | 0<br>ER | 0<br>EU | 1.5<br>WL              | 0<br>WT | 1.5<br>WR | 0<br>WU |       |
| 7:00 AM                         |  | 8                   | 76      | 0       | 0       | 0          | 65      | 58      | 0       | 0                      | 0       | 0       | 0       | 7                      | 0       | 60        | 0       | 274   |
| 7:15 AM                         |  | 12                  | 134     | 0       | 0       | 0          | 101     | 48      | 0       | 0                      | 0       | 0       | 0       | 8                      | 0       | 72        | 0       | 375   |
| 7:30 AM                         |  | 12                  | 123     | 0       | 0       | 0          | 123     | 59      | 0       | 0                      | 0       | 0       | 0       | 12                     | 0       | 100       | 0       | 429   |
| 7:45 AM                         |  | 6                   | 197     | 0       | 0       | 0          | 78      | 55      | 0       | 0                      | 0       | 0       | 0       | 10                     | 0       | 109       | 0       | 455   |
| 8:00 AM                         |  | 9                   | 138     | 0       | 0       | 0          | 96      | 59      | 0       | 0                      | 0       | 0       | 0       | 5                      | 0       | 77        | 0       | 384   |
| 8:15 AM                         |  | 6                   | 139     | 0       | 0       | 0          | 95      | 46      | 0       | 0                      | 0       | 0       | 0       | 12                     | 0       | 49        | 0       | 347   |
| 8:30 AM                         |  | 3                   | 131     | 0       | 0       | 0          | 85      | 42      | 0       | 0                      | 0       | 0       | 0       | 11                     | 0       | 65        | 0       | 337   |
| 8:45 AM                         |  | 7                   | 139     | 0       | 0       | 0          | 78      | 36      | 0       | 0                      | 0       | 0       | 0       | 8                      | 0       | 77        | 0       | 345   |
| TOTAL VOLUMES:<br>APPROACH %'s: |  | NL                  | NT      | NR      | NU      | SL         | ST      | SR      | SU      | EL                     | ET      | ER      | EU      | WL                     | WT      | WR        | WU      | TOTAL |
|                                 |  | 63                  | 1077    | 0       | 0       | 0          | 721     | 403     | 0       | 0                      | 0       | 0       | 0       | 73                     | 0       | 609       | 0       |       |
|                                 |  | 5.53%               | 94.47%  | 0.00%   | 0.00%   | 0.00%      | 64.15%  | 35.85%  | 0.00%   |                        |         |         |         | 10.70%                 | 0.00%   | 89.30%    | 0.00%   | 2946  |
| PEAK HR:                        |  | 07:15 AM - 08:15 AM |         |         |         |            |         |         |         |                        |         |         |         |                        |         |           |         | TOTAL |
| PEAK HR VOL:                    |  | 39                  | 592     | 0       | 0       | 0          | 398     | 221     | 0       | 0                      | 0       | 0       | 0       | 35                     | 0       | 358       | 0       |       |
| PEAK HR FACTOR:                 |  | 0.813               | 0.751   | 0.000   | 0.000   | 0.000      | 0.809   | 0.936   | 0.000   | 0.000                  | 0.000   | 0.000   | 0.000   | 0.729                  | 0.000   | 0.821     | 0.000   | 0.903 |
|                                 |  | 0.777               |         |         |         | 0.850      |         |         |         |                        |         |         |         | 0.826                  |         |           |         |       |

| PM                              |  | NORTHBOUND          |         |         |         | SOUTHBOUND |         |         |         | EASTBOUND |         |         |         | WESTBOUND |         |           |         |       |
|---------------------------------|--|---------------------|---------|---------|---------|------------|---------|---------|---------|-----------|---------|---------|---------|-----------|---------|-----------|---------|-------|
|                                 |  | 1<br>NL             | 2<br>NT | 0<br>NR | 0<br>NU | 0<br>SL    | 3<br>ST | 1<br>SR | 0<br>SU | 0<br>EL   | 0<br>ET | 0<br>ER | 0<br>EU | 1.5<br>WL | 0<br>WT | 1.5<br>WR | 0<br>WU | TOTAL |
|                                 |  | 5                   | 244     | 0       | 0       | 0          | 232     | 126     | 0       | 0         | 0       | 0       | 0       | 29        | 0       | 88        | 0       |       |
| 4:00 PM                         |  | 5                   | 232     | 0       | 0       | 0          | 202     | 113     | 0       | 0         | 0       | 0       | 0       | 30        | 0       | 80        | 0       | 724   |
| 4:15 PM                         |  | 6                   | 222     | 0       | 0       | 0          | 223     | 124     | 0       | 0         | 0       | 0       | 0       | 31        | 0       | 94        | 0       | 662   |
| 4:30 PM                         |  | 9                   | 238     | 0       | 0       | 0          | 196     | 118     | 0       | 0         | 0       | 0       | 0       | 29        | 0       | 98        | 0       | 700   |
| 4:45 PM                         |  | 10                  | 227     | 0       | 0       | 0          | 309     | 130     | 0       | 0         | 0       | 0       | 0       | 18        | 1       | 110       | 0       | 688   |
| 5:00 PM                         |  | 9                   | 231     | 0       | 0       | 0          | 249     | 134     | 0       | 0         | 0       | 0       | 0       | 46        | 0       | 97        | 0       | 805   |
| 5:15 PM                         |  | 7                   | 223     | 0       | 0       | 0          | 233     | 123     | 0       | 0         | 0       | 0       | 0       | 17        | 0       | 110       | 0       | 766   |
| 5:30 PM                         |  | 7                   | 223     | 0       | 0       | 0          | 233     | 123     | 0       | 0         | 0       | 0       | 0       | 17        | 0       | 110       | 0       | 713   |
| 5:45 PM                         |  | 11                  | 192     | 0       | 0       | 0          | 209     | 132     | 0       | 0         | 0       | 0       | 0       | 27        | 0       | 100       | 0       | 671   |
| TOTAL VOLUMES:<br>APPROACH %'s: |  | NL                  | NT      | NR      | NU      | SL         | ST      | SR      | SU      | EL        | ET      | ER      | EU      | WL        | WT      | WR        | WU      | TOTAL |
|                                 |  | 62                  | 1809    | 0       | 0       | 0          | 1853    | 1000    | 0       | 0         | 0       | 0       | 0       | 227       | 1       | 777       | 0       |       |
|                                 |  | 3.11%               | 96.69%  | 0.00%   | 0.00%   | 0.00%      | 64.95%  | 35.05%  | 0.00%   |           |         |         |         | 22.59%    | 0.10%   | 77.31%    | 0.00%   | 5729  |
| PEAK HR:                        |  | 04:45 PM - 05:45 PM |         |         |         |            |         |         |         |           |         |         |         |           |         |           |         | TOTAL |
| PEAK HR VOL:                    |  | 35                  | 919     | 0       | 0       | 0          | 987     | 505     | 0       | 0         | 0       | 0       | 0       | 110       | 1       | 415       | 0       |       |
| PEAK HR FACTOR:                 |  | 0.875               | 0.965   | 0.000   | 0.000   | 0.000      | 0.799   | 0.942   | 0.000   | 0.000     | 0.000   | 0.000   | 0.000   | 0.598     | 0.250   | 0.943     | 0.000   | 0.923 |
|                                 |  | 0.966               |         |         |         | 0.850      |         |         |         |           |         |         |         | 0.920     |         |           |         |       |



# National Data & Surveying Services

## Intersection Turning Movement Count

**Location:** 12th Ave & Glendale Ave  
**City:** Hanford  
**Control:** 2-Way Stop (EB/WB)

**Project ID:** 20-090149-004  
**Date:** 10/1/2020

### Total

| NS/EW Streets:          | 12th Ave            |        |       |       | 12th Ave   |        |        |       | Glendale Ave |       |         |       | Glendale Ave |       |         |       |              |
|-------------------------|---------------------|--------|-------|-------|------------|--------|--------|-------|--------------|-------|---------|-------|--------------|-------|---------|-------|--------------|
| AM                      | NORTHBOUND          |        |       |       | SOUTHBOUND |        |        |       | EASTBOUND    |       |         |       | WESTBOUND    |       |         |       | TOTAL        |
|                         | 0                   | 3      | 0     | 0     | 1          | 3      | 0      | 0     | 0            | 0     | 1       | 0     | 0            | 0     | 1       | 0     |              |
|                         | NL                  | NT     | NR    | NU    | SL         | ST     | SR     | SU    | EL           | ET    | ER      | EU    | WL           | WT    | WR      | WU    |              |
| 7:00 AM                 | 0                   | 130    | 7     | 0     | 2          | 116    | 18     | 0     | 0            | 0     | 7       | 0     | 0            | 0     | 10      | 0     | 290          |
| 7:15 AM                 | 0                   | 200    | 6     | 0     | 4          | 133    | 12     | 1     | 0            | 0     | 16      | 0     | 0            | 0     | 4       | 0     | 376          |
| 7:30 AM                 | 0                   | 211    | 9     | 0     | 4          | 171    | 22     | 1     | 0            | 0     | 15      | 0     | 0            | 0     | 9       | 0     | 442          |
| 7:45 AM                 | 0                   | 296    | 12    | 0     | 14         | 126    | 16     | 0     | 0            | 0     | 12      | 0     | 0            | 0     | 11      | 0     | 487          |
| 8:00 AM                 | 0                   | 203    | 10    | 0     | 6          | 136    | 27     | 1     | 0            | 0     | 12      | 0     | 0            | 0     | 8       | 0     | 403          |
| 8:15 AM                 | 0                   | 182    | 8     | 0     | 6          | 136    | 17     | 0     | 0            | 0     | 10      | 0     | 0            | 0     | 12      | 0     | 371          |
| 8:30 AM                 | 0                   | 189    | 8     | 0     | 1          | 111    | 12     | 0     | 0            | 0     | 9       | 0     | 0            | 0     | 10      | 0     | 340          |
| 8:45 AM                 | 0                   | 203    | 13    | 0     | 6          | 106    | 16     | 0     | 0            | 0     | 9       | 0     | 0            | 0     | 12      | 0     | 365          |
| <b>TOTAL VOLUMES :</b>  | NL                  | NT     | NR    | NU    | SL         | ST     | SR     | SU    | EL           | ET    | ER      | EU    | WL           | WT    | WR      | WU    | <b>TOTAL</b> |
| <b>APPROACH %'s :</b>   | 0                   | 1614   | 73    | 0     | 43         | 1035   | 140    | 3     | 0            | 0     | 90      | 0     | 0            | 0     | 76      | 0     | 3074         |
|                         | 0.00%               | 95.67% | 4.33% | 0.00% | 3.52%      | 84.77% | 11.47% | 0.25% | 0.00%        | 0.00% | 100.00% | 0.00% | 0.00%        | 0.00% | 100.00% | 0.00% |              |
| <b>PEAK HR :</b>        | 07:15 AM - 08:15 AM |        |       |       | 28         | 566    | 77     | 3     | 0            | 0     | 55      | 0     | 0            | 0     | 32      | 0     | <b>TOTAL</b> |
| <b>PEAK HR VOL :</b>    | 0                   | 910    | 37    | 0     | 28         | 566    | 77     | 3     | 0            | 0     | 55      | 0     | 0            | 0     | 32      | 0     | 1708         |
| <b>PEAK HR FACTOR :</b> | 0.000               | 0.769  | 0.771 | 0.000 | 0.500      | 0.827  | 0.713  | 0.750 | 0.000        | 0.000 | 0.859   | 0.000 | 0.000        | 0.000 | 0.727   | 0.000 | 0.877        |
|                         |                     | 0.769  |       |       |            | 0.851  |        |       |              |       | 0.859   |       |              |       | 0.727   |       |              |
| PM                      | NORTHBOUND          |        |       |       | SOUTHBOUND |        |        |       | EASTBOUND    |       |         |       | WESTBOUND    |       |         |       | TOTAL        |
|                         | 0                   | 3      | 0     | 0     | 1          | 3      | 0      | 0     | 0            | 0     | 1       | 0     | 0            | 0     | 1       | 0     |              |
|                         | NL                  | NT     | NR    | NU    | SL         | ST     | SR     | SU    | EL           | ET    | ER      | EU    | WL           | WT    | WR      | WU    |              |
| 4:00 PM                 | 0                   | 322    | 8     | 0     | 5          | 319    | 28     | 1     | 0            | 0     | 33      | 0     | 0            | 0     | 10      | 0     | 726          |
| 4:15 PM                 | 0                   | 302    | 12    | 0     | 9          | 302    | 30     | 2     | 0            | 0     | 24      | 0     | 0            | 0     | 15      | 0     | 696          |
| 4:30 PM                 | 0                   | 309    | 7     | 0     | 5          | 311    | 26     | 2     | 0            | 0     | 28      | 0     | 0            | 0     | 19      | 0     | 707          |
| 4:45 PM                 | 0                   | 328    | 8     | 0     | 8          | 295    | 36     | 3     | 0            | 0     | 32      | 0     | 0            | 0     | 22      | 0     | 732          |
| 5:00 PM                 | 0                   | 327    | 5     | 0     | 4          | 393    | 40     | 2     | 0            | 0     | 36      | 0     | 0            | 0     | 20      | 0     | 827          |
| 5:15 PM                 | 0                   | 328    | 5     | 0     | 3          | 357    | 25     | 0     | 0            | 0     | 35      | 0     | 0            | 0     | 14      | 0     | 767          |
| 5:30 PM                 | 0                   | 326    | 4     | 0     | 5          | 316    | 23     | 3     | 0            | 0     | 24      | 0     | 0            | 0     | 19      | 0     | 720          |
| 5:45 PM                 | 0                   | 288    | 7     | 0     | 6          | 315    | 34     | 0     | 0            | 0     | 28      | 0     | 0            | 0     | 11      | 0     | 689          |
| <b>TOTAL VOLUMES :</b>  | NL                  | NT     | NR    | NU    | SL         | ST     | SR     | SU    | EL           | ET    | ER      | EU    | WL           | WT    | WR      | WU    | <b>TOTAL</b> |
| <b>APPROACH %'s :</b>   | 0                   | 2530   | 56    | 0     | 45         | 2608   | 242    | 13    | 0            | 0     | 240     | 0     | 0            | 0     | 130     | 0     | 5864         |
|                         | 0.00%               | 97.83% | 2.17% | 0.00% | 1.55%      | 89.68% | 8.32%  | 0.45% | 0.00%        | 0.00% | 100.00% | 0.00% | 0.00%        | 0.00% | 100.00% | 0.00% |              |
| <b>PEAK HR :</b>        | 04:45 PM - 05:45 PM |        |       |       | 20         | 1361   | 124    | 8     | 0            | 0     | 127     | 0     | 0            | 0     | 75      | 0     | <b>TOTAL</b> |
| <b>PEAK HR VOL :</b>    | 0                   | 1309   | 22    | 0     | 20         | 1361   | 124    | 8     | 0            | 0     | 127     | 0     | 0            | 0     | 75      | 0     | 3046         |
| <b>PEAK HR FACTOR :</b> | 0.000               | 0.998  | 0.688 | 0.000 | 0.625      | 0.866  | 0.775  | 0.667 | 0.000        | 0.000 | 0.882   | 0.000 | 0.000        | 0.000 | 0.852   | 0.000 | 0.921        |
|                         |                     | 0.990  |       |       |            | 0.862  |        |       |              |       | 0.882   |       |              |       | 0.852   |       |              |

# National Data & Surveying Services

## Intersection Turning Movement Count

**Location:** Campus Dr & W 6th St  
**City:** Hanford  
**Control:** 2-Way Stop (EB/WB)

**Project ID:** 20-090149-003  
**Date:** 10/1/2020

### Total

| NS/EW Streets:          | Campus Dr           |         |         |         | Campus Dr  |         |         |         | W 6th St  |         |         |         | W 6th St  |         |         |         |              |
|-------------------------|---------------------|---------|---------|---------|------------|---------|---------|---------|-----------|---------|---------|---------|-----------|---------|---------|---------|--------------|
| AM                      | NORTHBOUND          |         |         |         | SOUTHBOUND |         |         |         | EASTBOUND |         |         |         | WESTBOUND |         |         |         | TOTAL        |
|                         | 0<br>NL             | 1<br>NT | 0<br>NR | 0<br>NU | 0<br>SL    | 1<br>ST | 0<br>SR | 0<br>SU | 0<br>EL   | 1<br>ET | 0<br>ER | 0<br>EU | 0<br>WL   | 1<br>WT | 0<br>WR | 0<br>WU |              |
| 7:00 AM                 | 0                   | 0       | 0       | 0       | 2          | 0       | 2       | 0       | 0         | 0       | 0       | 0       | 0         | 1       | 4       | 0       | 9            |
| 7:15 AM                 | 0                   | 0       | 1       | 0       | 6          | 0       | 0       | 0       | 1         | 1       | 1       | 0       | 0         | 1       | 6       | 0       | 17           |
| 7:30 AM                 | 0                   | 0       | 1       | 0       | 5          | 0       | 8       | 0       | 6         | 6       | 0       | 0       | 0         | 1       | 8       | 0       | 35           |
| 7:45 AM                 | 0                   | 2       | 0       | 0       | 5          | 1       | 8       | 0       | 3         | 3       | 0       | 0       | 0         | 5       | 22      | 0       | 49           |
| 8:00 AM                 | 0                   | 0       | 0       | 0       | 9          | 1       | 2       | 0       | 2         | 0       | 0       | 0       | 0         | 0       | 18      | 0       | 32           |
| 8:15 AM                 | 1                   | 1       | 0       | 0       | 4          | 2       | 1       | 0       | 1         | 1       | 1       | 0       | 0         | 2       | 8       | 0       | 22           |
| 8:30 AM                 | 1                   | 0       | 0       | 0       | 8          | 0       | 1       | 0       | 2         | 0       | 1       | 0       | 0         | 3       | 5       | 0       | 21           |
| 8:45 AM                 | 1                   | 0       | 0       | 0       | 14         | 1       | 2       | 0       | 1         | 0       | 1       | 0       | 0         | 2       | 14      | 0       | 36           |
| <b>TOTAL VOLUMES :</b>  | NL                  | NT      | NR      | NU      | SL         | ST      | SR      | SU      | EL        | ET      | ER      | EU      | WL        | WT      | WR      | WU      | <b>TOTAL</b> |
| <b>APPROACH %'s :</b>   | 3                   | 3       | 2       | 0       | 53         | 5       | 24      | 0       | 16        | 11      | 4       | 0       | 0         | 15      | 85      | 0       | 221          |
|                         | 37.50%              | 37.50%  | 25.00%  | 0.00%   | 64.63%     | 6.10%   | 29.27%  | 0.00%   | 51.61%    | 35.48%  | 12.90%  | 0.00%   | 0.00%     | 15.00%  | 85.00%  | 0.00%   |              |
| <b>PEAK HR :</b>        | 07:30 AM - 08:30 AM |         |         |         | 23         | 4       | 19      | 0       | 12        | 10      | 1       | 0       | 0         | 8       | 56      | 0       | <b>TOTAL</b> |
| <b>PEAK HR VOL :</b>    | 1                   | 3       | 1       | 0       | 0.639      | 0.500   | 0.594   | 0.000   | 0.500     | 0.417   | 0.250   | 0.000   | 0.000     | 0.400   | 0.636   | 0.000   | 138          |
| <b>PEAK HR FACTOR :</b> | 0.250               | 0.375   | 0.250   | 0.000   | 0.639      | 0.500   | 0.594   | 0.000   | 0.500     | 0.417   | 0.250   | 0.000   | 0.000     | 0.400   | 0.636   | 0.000   | 0.704        |
|                         |                     |         | 0.625   |         |            |         | 0.821   |         |           |         | 0.479   |         |           |         | 0.593   |         |              |
| PM                      | NORTHBOUND          |         |         |         | SOUTHBOUND |         |         |         | EASTBOUND |         |         |         | WESTBOUND |         |         |         | TOTAL        |
|                         | 0<br>NL             | 1<br>NT | 0<br>NR | 0<br>NU | 0<br>SL    | 1<br>ST | 0<br>SR | 0<br>SU | 0<br>EL   | 1<br>ET | 0<br>ER | 0<br>EU | 0<br>WL   | 1<br>WT | 0<br>WR | 0<br>WU |              |
| 4:00 PM                 | 0                   | 0       | 0       | 0       | 19         | 0       | 1       | 0       | 3         | 2       | 0       | 0       | 0         | 0       | 11      | 0       | 36           |
| 4:15 PM                 | 0                   | 0       | 0       | 0       | 10         | 0       | 3       | 0       | 1         | 2       | 0       | 0       | 0         | 1       | 10      | 0       | 27           |
| 4:30 PM                 | 0                   | 1       | 0       | 0       | 9          | 1       | 1       | 0       | 2         | 1       | 0       | 0       | 0         | 1       | 10      | 0       | 26           |
| 4:45 PM                 | 0                   | 0       | 0       | 0       | 9          | 0       | 6       | 0       | 3         | 1       | 0       | 0       | 0         | 1       | 22      | 0       | 42           |
| 5:00 PM                 | 0                   | 0       | 0       | 0       | 9          | 0       | 1       | 0       | 2         | 2       | 0       | 0       | 0         | 2       | 17      | 0       | 33           |
| 5:15 PM                 | 0                   | 0       | 0       | 0       | 10         | 0       | 2       | 0       | 2         | 1       | 0       | 0       | 0         | 1       | 9       | 0       | 25           |
| 5:30 PM                 | 0                   | 0       | 0       | 0       | 10         | 0       | 1       | 0       | 2         | 3       | 0       | 0       | 0         | 0       | 12      | 0       | 28           |
| 5:45 PM                 | 0                   | 0       | 0       | 0       | 3          | 0       | 2       | 0       | 1         | 0       | 0       | 0       | 0         | 2       | 4       | 0       | 12           |
| <b>TOTAL VOLUMES :</b>  | NL                  | NT      | NR      | NU      | SL         | ST      | SR      | SU      | EL        | ET      | ER      | EU      | WL        | WT      | WR      | WU      | <b>TOTAL</b> |
| <b>APPROACH %'s :</b>   | 0                   | 1       | 0       | 0       | 79         | 1       | 17      | 0       | 16        | 12      | 0       | 0       | 0         | 8       | 95      | 0       | 229          |
|                         | 0.00%               | 100.00% | 0.00%   | 0.00%   | 81.44%     | 1.03%   | 17.53%  | 0.00%   | 57.14%    | 42.86%  | 0.00%   | 0.00%   | 0.00%     | 7.77%   | 92.23%  | 0.00%   |              |
| <b>PEAK HR :</b>        | 04:00 PM - 05:00 PM |         |         |         | 47         | 1       | 11      | 0       | 9         | 6       | 0       | 0       | 0         | 3       | 53      | 0       | <b>TOTAL</b> |
| <b>PEAK HR VOL :</b>    | 0                   | 1       | 0       | 0       | 0.618      | 0.250   | 0.458   | 0.000   | 0.750     | 0.750   | 0.000   | 0.000   | 0.000     | 0.750   | 0.602   | 0.000   | 131          |
| <b>PEAK HR FACTOR :</b> | 0.000               | 0.250   | 0.000   | 0.000   | 0.618      | 0.250   | 0.458   | 0.000   | 0.750     | 0.750   | 0.000   | 0.000   | 0.000     | 0.750   | 0.602   | 0.000   | 0.780        |
|                         |                     |         | 0.250   |         |            |         | 0.738   |         |           |         | 0.750   |         |           |         | 0.609   |         |              |

# National Data & Surveying Services

## Intersection Turning Movement Count

**Location:** Campus Dr & W 7th St  
**City:** Hanford  
**Control:** 4-Way Stop

**Project ID:** 20-090149-002  
**Date:** 10/1/2020

### Total

| NS/EW Streets:         | Campus Dr           |          |          |         | Campus Dr  |          |          |         | W 7th St  |           |          |         | W 7th St  |           |          |         |                     |
|------------------------|---------------------|----------|----------|---------|------------|----------|----------|---------|-----------|-----------|----------|---------|-----------|-----------|----------|---------|---------------------|
| AM                     | NORTHBOUND          |          |          |         | SOUTHBOUND |          |          |         | EASTBOUND |           |          |         | WESTBOUND |           |          |         | TOTAL               |
|                        | 0<br>NL             | 1<br>NT  | 0<br>NR  | 0<br>NU | 0<br>SL    | 1<br>ST  | 0<br>SR  | 0<br>SU | 1<br>EL   | 1<br>ET   | 0<br>ER  | 0<br>EU | 1<br>WL   | 1<br>WT   | 0<br>WR  | 0<br>WU |                     |
| 7:00 AM                | 2                   | 2        | 0        | 0       | 1          | 2        | 5        | 0       | 6         | 16        | 2        | 0       | 1         | 18        | 2        | 0       | 57                  |
| 7:15 AM                | 1                   | 5        | 1        | 0       | 3          | 2        | 4        | 0       | 7         | 17        | 1        | 0       | 1         | 23        | 5        | 0       | 70                  |
| 7:30 AM                | 2                   | 8        | 4        | 0       | 3          | 8        | 10       | 0       | 13        | 14        | 3        | 0       | 4         | 32        | 2        | 0       | 103                 |
| 7:45 AM                | 8                   | 16       | 2        | 0       | 4          | 3        | 5        | 0       | 26        | 23        | 6        | 0       | 6         | 32        | 12       | 0       | 143                 |
| 8:00 AM                | 5                   | 14       | 2        | 0       | 1          | 7        | 5        | 0       | 17        | 24        | 2        | 0       | 1         | 19        | 5        | 0       | 102                 |
| 8:15 AM                | 2                   | 5        | 3        | 0       | 9          | 5        | 5        | 0       | 7         | 29        | 1        | 0       | 3         | 28        | 5        | 0       | 102                 |
| 8:30 AM                | 3                   | 4        | 0        | 0       | 6          | 4        | 10       | 0       | 8         | 31        | 7        | 0       | 0         | 26        | 4        | 0       | 103                 |
| 8:45 AM                | 4                   | 7        | 4        | 0       | 8          | 8        | 7        | 0       | 7         | 31        | 5        | 0       | 3         | 36        | 4        | 0       | 124                 |
| <b>TOTAL VOLUMES:</b>  | NL<br>27            | NT<br>61 | NR<br>16 | NU<br>0 | SL<br>35   | ST<br>39 | SR<br>51 | SU<br>0 | EL<br>91  | ET<br>185 | ER<br>27 | EU<br>0 | WL<br>19  | WT<br>214 | WR<br>39 | WU<br>0 | <b>TOTAL</b><br>804 |
| <b>APPROACH %'s:</b>   | 25.96%              | 58.65%   | 15.38%   | 0.00%   | 28.00%     | 31.20%   | 40.80%   | 0.00%   | 30.03%    | 61.06%    | 8.91%    | 0.00%   | 6.99%     | 78.68%    | 14.34%   | 0.00%   |                     |
| <b>PEAK HR:</b>        | 07:30 AM - 08:30 AM |          |          |         | 17         | 23       | 25       | 0       | 63        | 90        | 12       | 0       | 14        | 111       | 24       | 0       | <b>TOTAL</b><br>450 |
| <b>PEAK HR VOL:</b>    | 17                  | 43       | 11       | 0       | 17         | 23       | 25       | 0       | 63        | 90        | 12       | 0       | 14        | 111       | 24       | 0       | 0.787               |
| <b>PEAK HR FACTOR:</b> | 0.531               | 0.672    | 0.688    | 0.000   | 0.472      | 0.719    | 0.625    | 0.000   | 0.606     | 0.776     | 0.500    | 0.000   | 0.583     | 0.867     | 0.500    | 0.000   |                     |
|                        | 0.683               |          |          |         | 0.774      |          |          |         | 0.750     |           |          |         | 0.745     |           |          |         |                     |

| PM                     | NORTHBOUND          |          |         |         | SOUTHBOUND |          |           |         | EASTBOUND |           |          |         | WESTBOUND |           |          |         |                      |
|------------------------|---------------------|----------|---------|---------|------------|----------|-----------|---------|-----------|-----------|----------|---------|-----------|-----------|----------|---------|----------------------|
|                        | 0<br>NL             | 1<br>NT  | 0<br>NR | 0<br>NU | 0<br>SL    | 1<br>ST  | 0<br>SR   | 0<br>SU | 1<br>EL   | 1<br>ET   | 0<br>ER  | 0<br>EU | 1<br>WL   | 1<br>WT   | 0<br>WR  | 0<br>WU | TOTAL                |
| 4:00 PM                | 5                   | 8        | 0       | 0       | 13         | 9        | 10        | 0       | 19        | 53        | 8        | 0       | 3         | 62        | 10       | 0       | 200                  |
| 4:15 PM                | 4                   | 8        | 0       | 0       | 11         | 5        | 14        | 0       | 14        | 53        | 9        | 0       | 0         | 71        | 9        | 0       | 198                  |
| 4:30 PM                | 7                   | 6        | 0       | 0       | 23         | 5        | 16        | 0       | 15        | 49        | 5        | 0       | 1         | 58        | 3        | 0       | 188                  |
| 4:45 PM                | 10                  | 13       | 1       | 0       | 9          | 5        | 11        | 0       | 14        | 53        | 3        | 0       | 6         | 73        | 7        | 0       | 205                  |
| 5:00 PM                | 8                   | 9        | 2       | 0       | 25         | 7        | 26        | 0       | 11        | 49        | 3        | 0       | 0         | 57        | 12       | 0       | 209                  |
| 5:15 PM                | 4                   | 6        | 2       | 0       | 13         | 6        | 9         | 0       | 11        | 34        | 3        | 0       | 3         | 66        | 6        | 0       | 163                  |
| 5:30 PM                | 4                   | 10       | 1       | 0       | 7          | 6        | 9         | 0       | 12        | 47        | 5        | 0       | 2         | 56        | 5        | 0       | 164                  |
| 5:45 PM                | 2                   | 3        | 0       | 0       | 7          | 2        | 7         | 0       | 9         | 40        | 2        | 0       | 0         | 46        | 6        | 0       | 124                  |
| <b>TOTAL VOLUMES:</b>  | NL<br>44            | NT<br>63 | NR<br>6 | NU<br>0 | SL<br>108  | ST<br>45 | SR<br>102 | SU<br>0 | EL<br>105 | ET<br>378 | ER<br>38 | EU<br>0 | WL<br>15  | WT<br>489 | WR<br>58 | WU<br>0 | <b>TOTAL</b><br>1451 |
| <b>APPROACH %'s:</b>   | 38.94%              | 55.75%   | 5.31%   | 0.00%   | 42.35%     | 17.65%   | 40.00%    | 0.00%   | 20.15%    | 72.55%    | 7.29%    | 0.00%   | 2.67%     | 87.01%    | 10.32%   | 0.00%   |                      |
| <b>PEAK HR:</b>        | 04:15 PM - 05:15 PM |          |         |         | 68         | 22       | 67        | 0       | 54        | 204       | 20       | 0       | 7         | 259       | 31       | 0       | <b>TOTAL</b><br>800  |
| <b>PEAK HR VOL:</b>    | 29                  | 36       | 3       | 0       | 68         | 22       | 67        | 0       | 54        | 204       | 20       | 0       | 7         | 259       | 31       | 0       | 0.957                |
| <b>PEAK HR FACTOR:</b> | 0.725               | 0.692    | 0.375   | 0.000   | 0.680      | 0.786    | 0.644     | 0.000   | 0.900     | 0.962     | 0.556    | 0.000   | 0.292     | 0.887     | 0.646    | 0.000   |                      |
|                        | 0.708               |          |         |         | 0.677      |          |           |         | 0.914     |           |          |         | 0.863     |           |          |         |                      |

# National Data & Surveying Services

## Intersection Turning Movement Count

**Location:** Campus Dr & W Lacey Blvd  
**City:** Hanford  
**Control:** Signalized

**Project ID:** 20-090149-001  
**Date:** 10/1/2020

### Total

| NS/EW Streets:         | Campus Dr           |         |         |         | Campus Dr  |         |         |         | W Lacey Blvd |         |         |         | W Lacey Blvd |         |         |         |       |
|------------------------|---------------------|---------|---------|---------|------------|---------|---------|---------|--------------|---------|---------|---------|--------------|---------|---------|---------|-------|
| AM                     | NORTHBOUND          |         |         |         | SOUTHBOUND |         |         |         | EASTBOUND    |         |         |         | WESTBOUND    |         |         |         | TOTAL |
|                        | 1<br>NL             | 1<br>NT | 0<br>NR | 0<br>NU | 1<br>SL    | 1<br>ST | 1<br>SR | 0<br>SU | 1<br>EL      | 2<br>ET | 1<br>ER | 0<br>EU | 1<br>WL      | 2<br>WT | 1<br>WR | 0<br>WU |       |
| 7:00 AM                | 2                   | 2       | 4       | 0       | 1          | 9       | 0       | 0       | 1            | 31      | 0       | 0       | 5            | 27      | 3       | 0       | 85    |
| 7:15 AM                | 3                   | 4       | 8       | 0       | 3          | 4       | 2       | 0       | 2            | 44      | 3       | 1       | 4            | 43      | 8       | 0       | 129   |
| 7:30 AM                | 7                   | 12      | 7       | 0       | 5          | 9       | 3       | 0       | 4            | 52      | 4       | 1       | 17           | 44      | 14      | 1       | 180   |
| 7:45 AM                | 9                   | 19      | 11      | 0       | 3          | 11      | 1       | 0       | 2            | 68      | 9       | 0       | 15           | 60      | 24      | 0       | 232   |
| 8:00 AM                | 7                   | 14      | 11      | 0       | 5          | 15      | 3       | 0       | 3            | 71      | 12      | 3       | 6            | 60      | 7       | 0       | 217   |
| 8:15 AM                | 1                   | 6       | 4       | 0       | 10         | 11      | 2       | 0       | 2            | 70      | 2       | 1       | 11           | 75      | 8       | 0       | 203   |
| 8:30 AM                | 2                   | 8       | 13      | 0       | 9          | 13      | 3       | 0       | 2            | 79      | 1       | 1       | 7            | 75      | 10      | 0       | 223   |
| 8:45 AM                | 3                   | 8       | 10      | 0       | 10         | 11      | 1       | 0       | 3            | 80      | 5       | 0       | 12           | 90      | 8       | 0       | 241   |
| <b>TOTAL VOLUMES:</b>  | NL                  | NT      | NR      | NU      | SL         | ST      | SR      | SU      | EL           | ET      | ER      | EU      | WL           | WT      | WR      | WU      | TOTAL |
| <b>APPROACH %'s:</b>   | 34                  | 73      | 68      | 0       | 46         | 83      | 15      | 0       | 19           | 495     | 36      | 7       | 77           | 474     | 82      | 1       | 1510  |
|                        | 19.43%              | 41.71%  | 38.86%  | 0.00%   | 31.94%     | 57.64%  | 10.42%  | 0.00%   | 3.41%        | 88.87%  | 6.46%   | 1.26%   | 12.15%       | 74.76%  | 12.93%  | 0.16%   |       |
| <b>PEAK HR:</b>        | 08:00 AM - 09:00 AM |         |         |         | 34         | 50      | 9       | 0       | 10           | 300     | 20      | 5       | 36           | 300     | 33      | 0       | TOTAL |
| <b>PEAK HR VOL:</b>    | 13                  | 36      | 38      | 0       |            |         |         |         |              |         |         |         |              |         |         |         | 884   |
| <b>PEAK HR FACTOR:</b> | 0.464               | 0.643   | 0.731   | 0.000   | 0.850      | 0.833   | 0.750   | 0.000   | 0.833        | 0.938   | 0.417   | 0.417   | 0.750        | 0.833   | 0.825   | 0.000   | 0.917 |
|                        |                     |         | 0.680   |         |            |         | 0.930   |         |              |         | 0.941   |         |              |         | 0.839   |         |       |

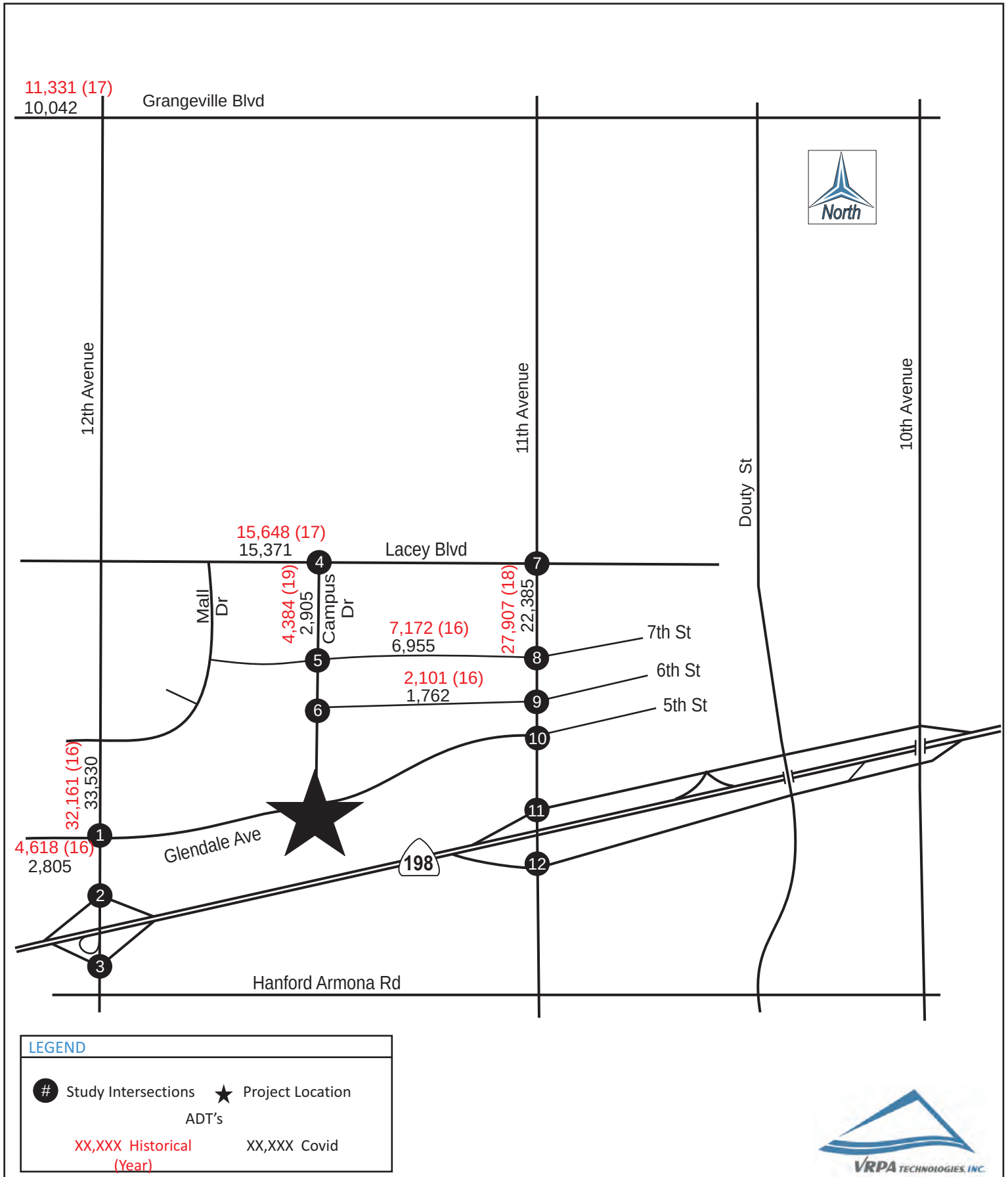
  

| PM                     | NORTHBOUND          |         |         |         | SOUTHBOUND |         |         |         | EASTBOUND |         |         |         | WESTBOUND |         |         |         | TOTAL |
|------------------------|---------------------|---------|---------|---------|------------|---------|---------|---------|-----------|---------|---------|---------|-----------|---------|---------|---------|-------|
|                        | 1<br>NL             | 1<br>NT | 0<br>NR | 0<br>NU | 1<br>SL    | 1<br>ST | 1<br>SR | 0<br>SU | 1<br>EL   | 2<br>ET | 1<br>ER | 0<br>EU | 1<br>WL   | 2<br>WT | 1<br>WR | 0<br>WU |       |
| 4:00 PM                | 4                   | 14      | 19      | 0       | 20         | 13      | 8       | 0       | 11        | 149     | 4       | 1       | 9         | 173     | 9       | 0       | 434   |
| 4:15 PM                | 5                   | 12      | 27      | 0       | 16         | 11      | 4       | 0       | 4         | 146     | 6       | 2       | 10        | 156     | 6       | 0       | 405   |
| 4:30 PM                | 4                   | 11      | 21      | 0       | 24         | 25      | 11      | 0       | 4         | 136     | 2       | 0       | 7         | 144     | 8       | 0       | 397   |
| 4:45 PM                | 5                   | 12      | 17      | 0       | 14         | 14      | 4       | 0       | 9         | 121     | 4       | 1       | 7         | 167     | 5       | 0       | 380   |
| 5:00 PM                | 14                  | 17      | 26      | 0       | 23         | 16      | 7       | 0       | 3         | 166     | 13      | 0       | 16        | 164     | 14      | 0       | 479   |
| 5:15 PM                | 4                   | 6       | 17      | 0       | 9          | 13      | 4       | 0       | 5         | 141     | 5       | 1       | 6         | 158     | 10      | 0       | 379   |
| 5:30 PM                | 3                   | 13      | 15      | 0       | 5          | 9       | 9       | 0       | 5         | 126     | 3       | 0       | 6         | 152     | 8       | 0       | 354   |
| 5:45 PM                | 2                   | 6       | 13      | 0       | 6          | 4       | 2       | 0       | 6         | 107     | 2       | 0       | 5         | 140     | 4       | 0       | 297   |
| <b>TOTAL VOLUMES:</b>  | NL                  | NT      | NR      | NU      | SL         | ST      | SR      | SU      | EL        | ET      | ER      | EU      | WL        | WT      | WR      | WU      | TOTAL |
| <b>APPROACH %'s:</b>   | 41                  | 91      | 155     | 0       | 117        | 105     | 49      | 0       | 47        | 1092    | 39      | 5       | 66        | 1254    | 64      | 0       | 3125  |
|                        | 14.29%              | 31.71%  | 54.01%  | 0.00%   | 43.17%     | 38.75%  | 18.08%  | 0.00%   | 3.97%     | 92.31%  | 3.30%   | 0.42%   | 4.77%     | 90.61%  | 4.62%   | 0.00%   |       |
| <b>PEAK HR:</b>        | 04:15 PM - 05:15 PM |         |         |         | 77         | 66      | 26      | 0       | 20        | 569     | 25      | 3       | 40        | 631     | 33      | 0       | TOTAL |
| <b>PEAK HR VOL:</b>    | 28                  | 52      | 91      | 0       |            |         |         |         |           |         |         |         |           |         |         |         | 1661  |
| <b>PEAK HR FACTOR:</b> | 0.500               | 0.765   | 0.843   | 0.000   | 0.802      | 0.660   | 0.591   | 0.000   | 0.556     | 0.857   | 0.481   | 0.375   | 0.625     | 0.945   | 0.589   | 0.000   | 0.867 |
|                        |                     |         | 0.750   |         |            |         | 0.704   |         |           |         | 0.848   |         |           |         | 0.907   |         |       |

# Hanford Place Development Traffic Impact Study

## Average Daily Traffic Historical vs Covid

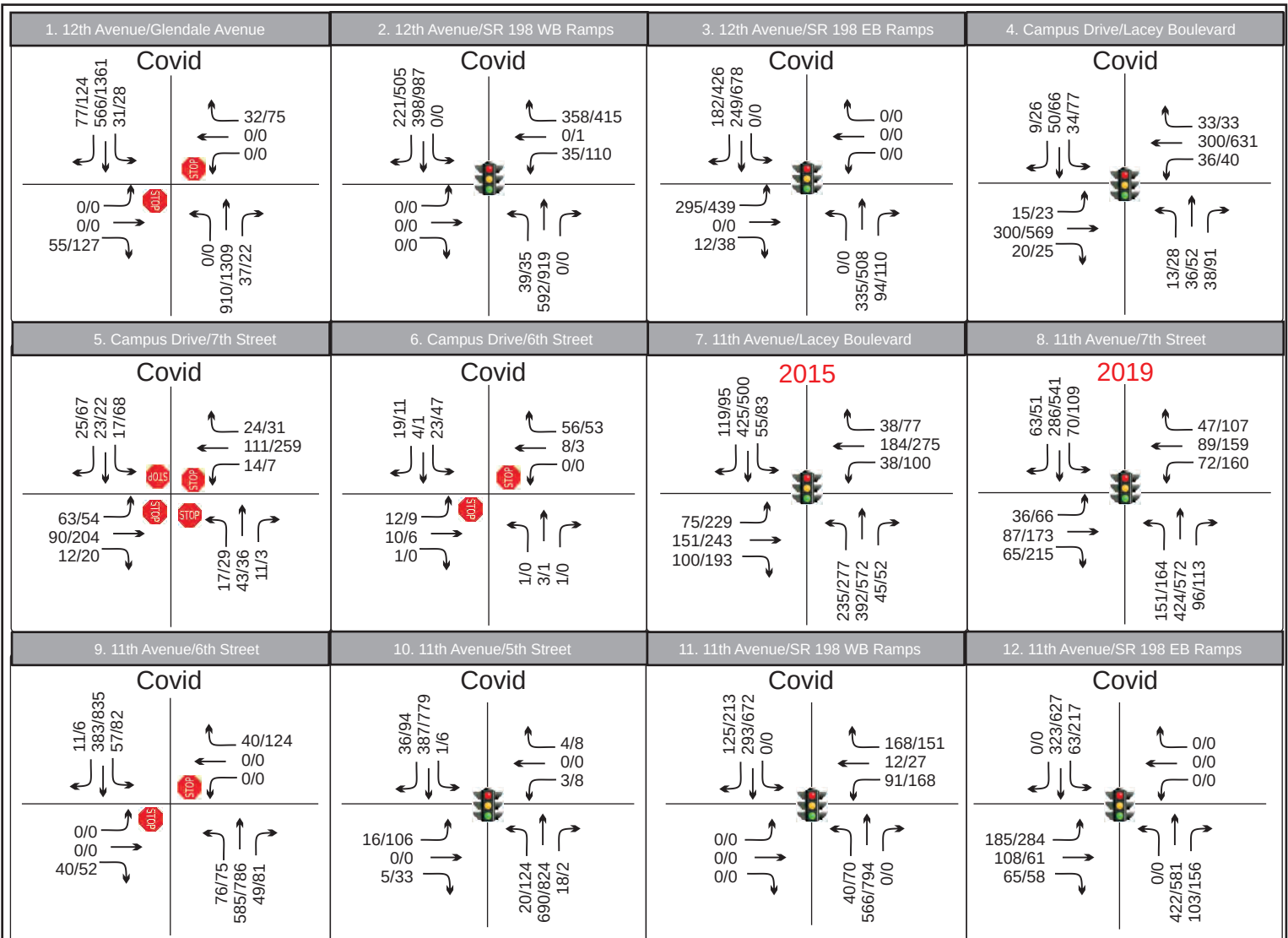
Figure  
7



# Hanford Place Development Traffic Impact Study

## Historical vs Covid

Figure  
7



### LEGEND

# Study Intersections ← AM/PM Peakhour



# **APPENDIX C**

## **SYNCHRO 10 (HCM 6<sup>th</sup> Edition) Worksheets**



# EXISTING WORKSHEETS

HCM 6th TWSC  
1: 12th Avenue & Glendale Avenue

10/31/2020

| Intersection             |      |      |                                                                                   |      |      |                                                                                   |      |                                                                                   |      |                                                                                     |                                                                                     |      |
|--------------------------|------|------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 1.2  |      |                                                                                   |      |      |                                                                                   |      |                                                                                   |      |                                                                                     |                                                                                     |      |
| Movement                 | EBL  | EBT  | EBR                                                                               | WBL  | WBT  | WBR                                                                               | NBL  | NBT                                                                               | NBR  | SBL                                                                                 | SBT                                                                                 | SBR  |
| Lane Configurations      |      |      |  |      |      |  |      |  |      |  |  |      |
| Traffic Vol, veh/h       | 0    | 0    | 72                                                                                | 0    | 0    | 42                                                                                | 0    | 1183                                                                              | 48   | 40                                                                                  | 736                                                                                 | 100  |
| Future Vol, veh/h        | 0    | 0    | 72                                                                                | 0    | 0    | 42                                                                                | 0    | 1183                                                                              | 48   | 40                                                                                  | 736                                                                                 | 100  |
| Conflicting Peds, #/hr   | 0    | 0    | 0                                                                                 | 0    | 0    | 0                                                                                 | 0    | 0                                                                                 | 0    | 0                                                                                   | 0                                                                                   | 0    |
| Sign Control             | Stop | Stop | Stop                                                                              | Stop | Stop | Stop                                                                              | Free | Free                                                                              | Free | Free                                                                                | Free                                                                                | Free |
| RT Channelized           | -    | -    | None                                                                              | -    | -    | None                                                                              | -    | -                                                                                 | None | -                                                                                   | -                                                                                   | None |
| Storage Length           | -    | -    | 0                                                                                 | -    | -    | 0                                                                                 | -    | -                                                                                 | -    | 125                                                                                 | -                                                                                   | -    |
| Veh in Median Storage, # | -    | 0    | -                                                                                 | -    | 0    | -                                                                                 | -    | 0                                                                                 | -    | -                                                                                   | 0                                                                                   | -    |
| Grade, %                 | -    | 0    | -                                                                                 | -    | 0    | -                                                                                 | -    | 0                                                                                 | -    | -                                                                                   | 0                                                                                   | -    |
| Peak Hour Factor         | 88   | 88   | 88                                                                                | 88   | 88   | 88                                                                                | 88   | 88                                                                                | 88   | 88                                                                                  | 88                                                                                  | 88   |
| Heavy Vehicles, %        | 3    | 3    | 3                                                                                 | 3    | 3    | 3                                                                                 | 3    | 3                                                                                 | 3    | 3                                                                                   | 3                                                                                   | 3    |
| Mvmt Flow                | 0    | 0    | 82                                                                                | 0    | 0    | 48                                                                                | 0    | 1344                                                                              | 55   | 45                                                                                  | 836                                                                                 | 114  |

| Major/Minor          | Minor2 |   | Minor1 |   | Major1 |      | Major2 |      |
|----------------------|--------|---|--------|---|--------|------|--------|------|
| Conflicting Flow All | -      | - | 475    | - | -      | 700  | -      | 0    |
| Stage 1              | -      | - | -      | - | -      | -    | -      | -    |
| Stage 2              | -      | - | -      | - | -      | -    | -      | -    |
| Critical Hdwy        | -      | - | 7.16   | - | -      | 7.16 | -      | 5.36 |
| Critical Hdwy Stg 1  | -      | - | -      | - | -      | -    | -      | -    |
| Critical Hdwy Stg 2  | -      | - | -      | - | -      | -    | -      | -    |
| Follow-up Hdwy       | -      | - | 3.93   | - | -      | 3.93 | -      | 3.13 |
| Pot Cap-1 Maneuver   | 0      | 0 | 456    | 0 | 0      | 326  | 0      | 248  |
| Stage 1              | 0      | 0 | -      | 0 | 0      | -    | -      | -    |
| Stage 2              | 0      | 0 | -      | 0 | 0      | -    | -      | -    |
| Platoon blocked, %   | -      | - | -      | - | -      | -    | -      | -    |
| Mov Cap-1 Maneuver   | -      | - | 456    | - | -      | 326  | -      | 248  |
| Mov Cap-2 Maneuver   | -      | - | -      | - | -      | -    | -      | -    |
| Stage 1              | -      | - | -      | - | -      | -    | -      | -    |
| Stage 2              | -      | - | -      | - | -      | -    | -      | -    |

| Approach             | EB   | WB   | NB | SB |
|----------------------|------|------|----|----|
| HCM Control Delay, s | 14.6 | 17.9 | 0  | 1  |
| HCM LOS              | B    | C    |    |    |

| Minor Lane/Major Mvmt | NBT | NBR | EBLn1WBLn1 | SBL   | SBT   | SBR |
|-----------------------|-----|-----|------------|-------|-------|-----|
| Capacity (veh/h)      | -   | -   | 456        | 326   | 248   | -   |
| HCM Lane V/C Ratio    | -   | -   | 0.179      | 0.146 | 0.183 | -   |
| HCM Control Delay (s) | -   | -   | 14.6       | 17.9  | 22.7  | -   |
| HCM Lane LOS          | -   | -   | B          | C     | C     | -   |
| HCM 95th %tile Q(veh) | -   | -   | 0.6        | 0.5   | 0.7   | -   |

HCM 6th TWSC  
6: Campus Dr & 6th Street

10/31/2020

| Intersection             |        |                                                                                   |        |            |                                                                                   |        |       |                                                                                   |        |       |                                                                                     |      |
|--------------------------|--------|-----------------------------------------------------------------------------------|--------|------------|-----------------------------------------------------------------------------------|--------|-------|-----------------------------------------------------------------------------------|--------|-------|-------------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 7.2    |                                                                                   |        |            |                                                                                   |        |       |                                                                                   |        |       |                                                                                     |      |
| Movement                 | EBL    | EBT                                                                               | EBR    | WBL        | WBT                                                                               | WBR    | NBL   | NBT                                                                               | NBR    | SBL   | SBT                                                                                 | SBR  |
| Lane Configurations      |        |  |        |            |  |        |       |  |        |       |  |      |
| Traffic Vol, veh/h       | 16     | 13                                                                                | 1      | 0          | 10                                                                                | 73     | 1     | 4                                                                                 | 1      | 30    | 5                                                                                   | 25   |
| Future Vol, veh/h        | 16     | 13                                                                                | 1      | 0          | 10                                                                                | 73     | 1     | 4                                                                                 | 1      | 30    | 5                                                                                   | 25   |
| Conflicting Peds, #/hr   | 0      | 0                                                                                 | 0      | 0          | 0                                                                                 | 0      | 0     | 0                                                                                 | 0      | 0     | 0                                                                                   | 0    |
| Sign Control             | Stop   | Stop                                                                              | Stop   | Stop       | Stop                                                                              | Stop   | Free  | Free                                                                              | Free   | Free  | Free                                                                                | Free |
| RT Channelized           | -      | -                                                                                 | None   | -          | -                                                                                 | None   | -     | -                                                                                 | None   | -     | -                                                                                   | None |
| Storage Length           | -      | -                                                                                 | -      | -          | -                                                                                 | -      | -     | -                                                                                 | -      | -     | -                                                                                   | -    |
| Veh in Median Storage, # | -      | 0                                                                                 | -      | -          | 0                                                                                 | -      | -     | 0                                                                                 | -      | -     | 0                                                                                   | -    |
| Grade, %                 | -      | 0                                                                                 | -      | -          | 0                                                                                 | -      | -     | 0                                                                                 | -      | -     | 0                                                                                   | -    |
| Peak Hour Factor         | 70     | 70                                                                                | 70     | 70         | 70                                                                                | 70     | 70    | 70                                                                                | 70     | 70    | 70                                                                                  | 70   |
| Heavy Vehicles, %        | 3      | 3                                                                                 | 3      | 3          | 3                                                                                 | 3      | 3     | 3                                                                                 | 3      | 3     | 3                                                                                   | 3    |
| Mvmt Flow                | 23     | 19                                                                                | 1      | 0          | 14                                                                                | 104    | 1     | 6                                                                                 | 1      | 43    | 7                                                                                   | 36   |
|                          |        |                                                                                   |        |            |                                                                                   |        |       |                                                                                   |        |       |                                                                                     |      |
| Major/Minor              | Minor2 |                                                                                   | Minor1 |            |                                                                                   | Major1 |       |                                                                                   | Major2 |       |                                                                                     |      |
| Conflicting Flow All     | 179    | 120                                                                               | 25     | 130        | 138                                                                               | 7      | 43    | 0                                                                                 | 0      | 7     | 0                                                                                   | 0    |
| Stage 1                  | 111    | 111                                                                               | -      | 9          | 9                                                                                 | -      | -     | -                                                                                 | -      | -     | -                                                                                   | -    |
| Stage 2                  | 68     | 9                                                                                 | -      | 121        | 129                                                                               | -      | -     | -                                                                                 | -      | -     | -                                                                                   | -    |
| Critical Hdwy            | 7.13   | 6.53                                                                              | 6.23   | 7.13       | 6.53                                                                              | 6.23   | 4.13  | -                                                                                 | -      | 4.13  | -                                                                                   | -    |
| Critical Hdwy Stg 1      | 6.13   | 5.53                                                                              | -      | 6.13       | 5.53                                                                              | -      | -     | -                                                                                 | -      | -     | -                                                                                   | -    |
| Critical Hdwy Stg 2      | 6.13   | 5.53                                                                              | -      | 6.13       | 5.53                                                                              | -      | -     | -                                                                                 | -      | -     | -                                                                                   | -    |
| Follow-up Hdwy           | 3.527  | 4.027                                                                             | 3.327  | 3.527      | 4.027                                                                             | 3.327  | 2.227 | -                                                                                 | -      | 2.227 | -                                                                                   | -    |
| Pot Cap-1 Maneuver       | 781    | 768                                                                               | 1048   | 840        | 751                                                                               | 1072   | 1559  | -                                                                                 | -      | 1607  | -                                                                                   | -    |
| Stage 1                  | 892    | 802                                                                               | -      | 1010       | 886                                                                               | -      | -     | -                                                                                 | -      | -     | -                                                                                   | -    |
| Stage 2                  | 940    | 886                                                                               | -      | 881        | 787                                                                               | -      | -     | -                                                                                 | -      | -     | -                                                                                   | -    |
| Platoon blocked, %       |        |                                                                                   |        |            |                                                                                   |        |       | -                                                                                 | -      |       | -                                                                                   | -    |
| Mov Cap-1 Maneuver       | 679    | 746                                                                               | 1048   | 805        | 729                                                                               | 1072   | 1559  | -                                                                                 | -      | 1607  | -                                                                                   | -    |
| Mov Cap-2 Maneuver       | 679    | 746                                                                               | -      | 805        | 729                                                                               | -      | -     | -                                                                                 | -      | -     | -                                                                                   | -    |
| Stage 1                  | 891    | 780                                                                               | -      | 1009       | 885                                                                               | -      | -     | -                                                                                 | -      | -     | -                                                                                   | -    |
| Stage 2                  | 834    | 885                                                                               | -      | 835        | 765                                                                               | -      | -     | -                                                                                 | -      | -     | -                                                                                   | -    |
|                          |        |                                                                                   |        |            |                                                                                   |        |       |                                                                                   |        |       |                                                                                     |      |
| Approach                 | EB     |                                                                                   | WB     |            |                                                                                   | NB     |       |                                                                                   | SB     |       |                                                                                     |      |
| HCM Control Delay, s     | 10.4   |                                                                                   | 9      |            |                                                                                   | 1.2    |       |                                                                                   | 3.7    |       |                                                                                     |      |
| HCM LOS                  | B      |                                                                                   | A      |            |                                                                                   |        |       |                                                                                   |        |       |                                                                                     |      |
|                          |        |                                                                                   |        |            |                                                                                   |        |       |                                                                                   |        |       |                                                                                     |      |
| Minor Lane/Major Mvmt    | NBL    | NBT                                                                               | NBR    | EBLn1WBLn1 | SBL                                                                               | SBT    | SBR   |                                                                                   |        |       |                                                                                     |      |
| Capacity (veh/h)         | 1559   | -                                                                                 | -      | 715 1014   | 1607                                                                              | -      | -     |                                                                                   |        |       |                                                                                     |      |
| HCM Lane V/C Ratio       | 0.001  | -                                                                                 | -      | 0.06 0.117 | 0.027                                                                             | -      | -     |                                                                                   |        |       |                                                                                     |      |
| HCM Control Delay (s)    | 7.3    | 0                                                                                 | -      | 10.4 9     | 7.3                                                                               | 0      | -     |                                                                                   |        |       |                                                                                     |      |
| HCM Lane LOS             | A      | A                                                                                 | -      | B A        | A                                                                                 | A      | -     |                                                                                   |        |       |                                                                                     |      |
| HCM 95th %tile Q(veh)    | 0      | -                                                                                 | -      | 0.2 0.4    | 0.1                                                                               | -      | -     |                                                                                   |        |       |                                                                                     |      |

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.8  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      |      | ↗    |      |      | ↗    | ↗    | ↗↘   |      | ↗    | ↗↘   |      |
| Traffic Vol, veh/h       | 0    | 0    | 52   | 0    | 0    | 52   | 99   | 761  | 64   | 74   | 498  | 14   |
| Future Vol, veh/h        | 0    | 0    | 52   | 0    | 0    | 52   | 99   | 761  | 64   | 74   | 498  | 14   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | 0    | -    | -    | 0    | 75   | -    | -    | 125  | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 87   | 87   | 87   | 87   | 87   | 87   | 87   | 87   | 87   | 87   | 87   | 87   |
| Heavy Vehicles, %        | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    |
| Mvmt Flow                | 0    | 0    | 60   | 0    | 0    | 60   | 114  | 875  | 74   | 85   | 572  | 16   |

| Major/Minor          | Minor2 |   | Minor1 |   | Major1 |      | Major2 |   |
|----------------------|--------|---|--------|---|--------|------|--------|---|
| Conflicting Flow All | -      | - | 294    | - | -      | 475  | 588    | 0 |
| Stage 1              | -      | - | -      | - | -      | -    | -      | - |
| Stage 2              | -      | - | -      | - | -      | -    | -      | - |
| Critical Hdwy        | -      | - | 6.96   | - | -      | 6.96 | 4.16   | - |
| Critical Hdwy Stg 1  | -      | - | -      | - | -      | -    | -      | - |
| Critical Hdwy Stg 2  | -      | - | -      | - | -      | -    | -      | - |
| Follow-up Hdwy       | -      | - | 3.33   | - | -      | 3.33 | 2.23   | - |
| Pot Cap-1 Maneuver   | 0      | 0 | 699    | 0 | 0      | 533  | 976    | - |
| Stage 1              | 0      | 0 | -      | 0 | 0      | -    | -      | - |
| Stage 2              | 0      | 0 | -      | 0 | 0      | -    | -      | - |
| Platoon blocked, %   | -      | - | -      | - | -      | -    | -      | - |
| Mov Cap-1 Maneuver   | -      | - | 699    | - | -      | 533  | 976    | - |
| Mov Cap-2 Maneuver   | -      | - | -      | - | -      | -    | -      | - |
| Stage 1              | -      | - | -      | - | -      | -    | -      | - |
| Stage 2              | -      | - | -      | - | -      | -    | -      | - |

| Approach             | EB   | WB   | NB | SB  |
|----------------------|------|------|----|-----|
| HCM Control Delay, s | 10.6 | 12.6 | 1  | 1.4 |
| HCM LOS              | B    | B    |    |     |

| Minor Lane/Major Mvmt | NBL   | NBT | NBR | EBLn1WBLn1 | SBL   | SBT   | SBR |
|-----------------------|-------|-----|-----|------------|-------|-------|-----|
| Capacity (veh/h)      | 976   | -   | -   | 699        | 533   | 713   | -   |
| HCM Lane V/C Ratio    | 0.117 | -   | -   | 0.086      | 0.112 | 0.119 | -   |
| HCM Control Delay (s) | 9.2   | -   | -   | 10.6       | 12.6  | 10.7  | -   |
| HCM Lane LOS          | A     | -   | -   | B          | B     | B     | -   |
| HCM 95th %tile Q(veh) | 0.4   | -   | -   | 0.3        | 0.4   | 0.4   | -   |

# HCM 6th Signalized Intersection Summary

## 2: SR 198 WB Ramps & 12th Avenue

10/31/2020

|                              |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | WBL                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                                 | SBR                                                                                 | NEL                                                                                 | NER                                                                                 |
| Lane Configurations          |  |  |  |  |                                                                                   |                                                                                   |  |  |                                                                                     |                                                                                     |
| Traffic Volume (veh/h)       | 46                                                                                | 465                                                                               | 51                                                                                | 770                                                                               | 0                                                                                 | 0                                                                                 | 517                                                                                 | 287                                                                                 | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 46                                                                                | 465                                                                               | 51                                                                                | 770                                                                               | 0                                                                                 | 0                                                                                 | 517                                                                                 | 287                                                                                 | 0                                                                                   | 0                                                                                   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 0                                                                                 | 0                                                                                 | 1856                                                                                | 1856                                                                                |                                                                                     |                                                                                     |
| Adj Flow Rate, veh/h         | 51                                                                                | 517                                                                               | 57                                                                                | 856                                                                               | 0                                                                                 | 0                                                                                 | 574                                                                                 | 319                                                                                 |                                                                                     |                                                                                     |
| Peak Hour Factor             | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                                | 0.90                                                                                |                                                                                     |                                                                                     |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 3                                                                                   | 3                                                                                   |                                                                                     |                                                                                     |
| Cap, veh/h                   | 370                                                                               | 658                                                                               | 82                                                                                | 2366                                                                              | 0                                                                                 | 0                                                                                 | 1992                                                                                | 889                                                                                 |                                                                                     |                                                                                     |
| Arrive On Green              | 0.21                                                                              | 0.21                                                                              | 0.05                                                                              | 0.67                                                                              | 0.00                                                                              | 0.00                                                                              | 0.57                                                                                | 0.57                                                                                |                                                                                     |                                                                                     |
| Sat Flow, veh/h              | 1767                                                                              | 3145                                                                              | 1767                                                                              | 3618                                                                              | 0                                                                                 | 0                                                                                 | 3618                                                                                | 1572                                                                                |                                                                                     |                                                                                     |
| Grp Volume(v), veh/h         | 51                                                                                | 517                                                                               | 57                                                                                | 856                                                                               | 0                                                                                 | 0                                                                                 | 574                                                                                 | 319                                                                                 |                                                                                     |                                                                                     |
| Grp Sat Flow(s),veh/h/ln     | 1767                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 0                                                                                 | 0                                                                                 | 1763                                                                                | 1572                                                                                |                                                                                     |                                                                                     |
| Q Serve(g_s), s              | 1.8                                                                               | 11.7                                                                              | 2.4                                                                               | 7.9                                                                               | 0.0                                                                               | 0.0                                                                               | 6.4                                                                                 | 8.3                                                                                 |                                                                                     |                                                                                     |
| Cycle Q Clear(g_c), s        | 1.8                                                                               | 11.7                                                                              | 2.4                                                                               | 7.9                                                                               | 0.0                                                                               | 0.0                                                                               | 6.4                                                                                 | 8.3                                                                                 |                                                                                     |                                                                                     |
| Prop In Lane                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 0.00                                                                              |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |
| Lane Grp Cap(c), veh/h       | 370                                                                               | 658                                                                               | 82                                                                                | 2366                                                                              | 0                                                                                 | 0                                                                                 | 1992                                                                                | 889                                                                                 |                                                                                     |                                                                                     |
| V/C Ratio(X)                 | 0.14                                                                              | 0.79                                                                              | 0.70                                                                              | 0.36                                                                              | 0.00                                                                              | 0.00                                                                              | 0.29                                                                                | 0.36                                                                                |                                                                                     |                                                                                     |
| Avail Cap(c_a), veh/h        | 716                                                                               | 1275                                                                              | 247                                                                               | 2366                                                                              | 0                                                                                 | 0                                                                                 | 1992                                                                                | 889                                                                                 |                                                                                     |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Uniform Delay (d), s/veh     | 24.2                                                                              | 28.2                                                                              | 35.4                                                                              | 5.4                                                                               | 0.0                                                                               | 0.0                                                                               | 8.5                                                                                 | 8.9                                                                                 |                                                                                     |                                                                                     |
| Incr Delay (d2), s/veh       | 0.2                                                                               | 2.1                                                                               | 10.2                                                                              | 0.4                                                                               | 0.0                                                                               | 0.0                                                                               | 0.4                                                                                 | 1.1                                                                                 |                                                                                     |                                                                                     |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |
| %ile BackOfQ(50%),veh/ln     | 0.7                                                                               | 4.2                                                                               | 1.2                                                                               | 2.1                                                                               | 0.0                                                                               | 0.0                                                                               | 2.1                                                                                 | 2.6                                                                                 |                                                                                     |                                                                                     |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 24.4                                                                              | 30.3                                                                              | 45.6                                                                              | 5.8                                                                               | 0.0                                                                               | 0.0                                                                               | 8.9                                                                                 | 10.1                                                                                |                                                                                     |                                                                                     |
| LnGrp LOS                    | C                                                                                 | C                                                                                 | D                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                   | B                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          | 568                                                                               |                                                                                   |                                                                                   | 913                                                                               |                                                                                   |                                                                                   | 893                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 29.7                                                                              |                                                                                   |                                                                                   | 8.3                                                                               |                                                                                   |                                                                                   | 9.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 2                                                                                 |                                                                                   | 5                                                                                 |                                                                                   | 6                                                                                 |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 55.0                                                                              |                                                                                   | 8.0                                                                               |                                                                                   | 47.0                                                                              |                                                                                   | 20.2                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 50.5                                                                              |                                                                                   | 10.5                                                                              |                                                                                   | 35.5                                                                              |                                                                                   | 30.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 9.9                                                                               |                                                                                   | 4.4                                                                               |                                                                                   | 10.3                                                                              |                                                                                   | 13.7                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 6.7                                                                               |                                                                                   | 0.0                                                                               |                                                                                   | 5.0                                                                               |                                                                                   | 2.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 13.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary 3: 12th Avenue & SR 198 EB Off Ramps

10/31/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                    |  |  |                                                                                     |  |  |
| Traffic Volume (veh/h)       | 384                                                                               | 0                                                                                 | 16                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 436                                                                                 | 122                                                                                 | 0                                                                                   | 324                                                                                 | 237                                                                                 |
| Future Volume (veh/h)        | 384                                                                               | 0                                                                                 | 16                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 436                                                                                 | 122                                                                                 | 0                                                                                   | 324                                                                                 | 237                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                 |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 0                                                                                 | 1856                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1856                                                                                | 1856                                                                                | 0                                                                                   | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 427                                                                               | 0                                                                                 | 18                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 484                                                                                 | 0                                                                                   | 0                                                                                   | 360                                                                                 | 0                                                                                   |
| Peak Hour Factor             | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.90                                                                               | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 0                                                                                 | 3                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 3                                                                                   | 3                                                                                   | 0                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 588                                                                               | 0                                                                                 | 270                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 2439                                                                                |                                                                                     | 0                                                                                   | 2439                                                                                |                                                                                     |
| Arrive On Green              | 0.17                                                                              | 0.00                                                                              | 0.17                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.69                                                                                | 0.00                                                                                | 0.00                                                                                | 0.69                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 3428                                                                              | 0                                                                                 | 1572                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 3618                                                                                | 1572                                                                                | 0                                                                                   | 3618                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 427                                                                               | 0                                                                                 | 18                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 484                                                                                 | 0                                                                                   | 0                                                                                   | 360                                                                                 | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1714                                                                              | 0                                                                                 | 1572                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1763                                                                                | 1572                                                                                | 0                                                                                   | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 7.8                                                                               | 0.0                                                                               | 0.6                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 3.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 2.3                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 7.8                                                                               | 0.0                                                                               | 0.6                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 3.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 2.3                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               |                                                                                     | 1.00                                                                                | 0.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 588                                                                               | 0                                                                                 | 270                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 2439                                                                                |                                                                                     | 0                                                                                   | 2439                                                                                |                                                                                     |
| V/C Ratio(X)                 | 0.73                                                                              | 0.00                                                                              | 0.07                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.20                                                                                |                                                                                     | 0.00                                                                                | 0.15                                                                                |                                                                                     |
| Avail Cap(c_a), veh/h        | 1850                                                                              | 0                                                                                 | 849                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 2439                                                                                |                                                                                     | 0                                                                                   | 2439                                                                                |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 25.8                                                                              | 0.0                                                                               | 22.8                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 3.6                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 3.5                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 1.7                                                                               | 0.0                                                                               | 0.1                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 0.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 3.0                                                                               | 0.0                                                                               | 0.2                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 0.7                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.5                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 27.5                                                                              | 0.0                                                                               | 22.9                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 3.8                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 3.6                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | A                                                                                  | A                                                                                   |                                                                                     | A                                                                                   | A                                                                                   |                                                                                     |
| Approach Vol, veh/h          | 445                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 484                                                                                |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 27.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 3.8                                                                                |                                                                                     |                                                                                     | 3.6                                                                                 |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | A                                                                                  |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 50.0                                                                              |                                                                                   |                                                                                   | 15.8                                                                              |                                                                                   |                                                                                   | 50.0                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               |                                                                                   |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                   | 4.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 45.5                                                                              |                                                                                   |                                                                                   | 35.5                                                                              |                                                                                   |                                                                                   | 45.5                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 5.2                                                                               |                                                                                   |                                                                                   | 9.8                                                                               |                                                                                   |                                                                                   | 4.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 3.3                                                                               |                                                                                   |                                                                                   | 1.5                                                                               |                                                                                   |                                                                                   | 2.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 11.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 4: Campus Drive & Lacey Boulevard

10/31/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 20                                                                                | 390                                                                               | 26                                                                                | 47                                                                                | 390                                                                               | 43                                                                                | 17                                                                                 | 47                                                                                  | 49                                                                                  | 44                                                                                  | 65                                                                                  | 12                                                                                  |
| Future Volume (veh/h)        | 20                                                                                | 390                                                                               | 26                                                                                | 47                                                                                | 390                                                                               | 43                                                                                | 17                                                                                 | 47                                                                                  | 49                                                                                  | 44                                                                                  | 65                                                                                  | 12                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                 |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                               | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 22                                                                                | 424                                                                               | 28                                                                                | 51                                                                                | 424                                                                               | 47                                                                                | 18                                                                                 | 51                                                                                  | 53                                                                                  | 48                                                                                  | 71                                                                                  | 13                                                                                  |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                  | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 44                                                                                | 625                                                                               | 279                                                                               | 81                                                                                | 698                                                                               | 311                                                                               | 38                                                                                 | 386                                                                                 | 401                                                                                 | 78                                                                                  | 902                                                                                 | 765                                                                                 |
| Arrive On Green              | 0.03                                                                              | 0.18                                                                              | 0.18                                                                              | 0.05                                                                              | 0.20                                                                              | 0.20                                                                              | 0.02                                                                               | 0.46                                                                                | 0.46                                                                                | 0.04                                                                                | 0.49                                                                                | 0.49                                                                                |
| Sat Flow, veh/h              | 1767                                                                              | 3526                                                                              | 1572                                                                              | 1767                                                                              | 3526                                                                              | 1572                                                                              | 1767                                                                               | 833                                                                                 | 866                                                                                 | 1767                                                                                | 1856                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 22                                                                                | 424                                                                               | 28                                                                                | 51                                                                                | 424                                                                               | 47                                                                                | 18                                                                                 | 0                                                                                   | 104                                                                                 | 48                                                                                  | 71                                                                                  | 13                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1767                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                               | 0                                                                                   | 1700                                                                                | 1767                                                                                | 1856                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 0.8                                                                               | 7.5                                                                               | 1.0                                                                               | 1.9                                                                               | 7.3                                                                               | 1.7                                                                               | 0.7                                                                                | 0.0                                                                                 | 2.3                                                                                 | 1.8                                                                                 | 1.4                                                                                 | 0.3                                                                                 |
| Cycle Q Clear(g_c), s        | 0.8                                                                               | 7.5                                                                               | 1.0                                                                               | 1.9                                                                               | 7.3                                                                               | 1.7                                                                               | 0.7                                                                                | 0.0                                                                                 | 2.3                                                                                 | 1.8                                                                                 | 1.4                                                                                 | 0.3                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.51                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 44                                                                                | 625                                                                               | 279                                                                               | 81                                                                                | 698                                                                               | 311                                                                               | 38                                                                                 | 0                                                                                   | 788                                                                                 | 78                                                                                  | 902                                                                                 | 765                                                                                 |
| V/C Ratio(X)                 | 0.50                                                                              | 0.68                                                                              | 0.10                                                                              | 0.63                                                                              | 0.61                                                                              | 0.15                                                                              | 0.48                                                                               | 0.00                                                                                | 0.13                                                                                | 0.62                                                                                | 0.08                                                                                | 0.02                                                                                |
| Avail Cap(c_a), veh/h        | 198                                                                               | 1240                                                                              | 553                                                                               | 251                                                                               | 1345                                                                              | 600                                                                               | 172                                                                                | 0                                                                                   | 788                                                                                 | 251                                                                                 | 902                                                                                 | 765                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 32.2                                                                              | 25.7                                                                              | 23.0                                                                              | 31.3                                                                              | 24.4                                                                              | 22.2                                                                              | 32.3                                                                               | 0.0                                                                                 | 10.2                                                                                | 31.4                                                                                | 9.2                                                                                 | 8.9                                                                                 |
| Incr Delay (d2), s/veh       | 8.3                                                                               | 1.3                                                                               | 0.2                                                                               | 7.8                                                                               | 0.9                                                                               | 0.2                                                                               | 9.2                                                                                | 0.0                                                                                 | 0.3                                                                                 | 7.6                                                                                 | 0.2                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.4                                                                               | 3.0                                                                               | 0.4                                                                               | 0.9                                                                               | 2.9                                                                               | 0.6                                                                               | 0.4                                                                                | 0.0                                                                                 | 0.9                                                                                 | 0.9                                                                                 | 0.5                                                                                 | 0.1                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 40.5                                                                              | 27.0                                                                              | 23.2                                                                              | 39.2                                                                              | 25.3                                                                              | 22.4                                                                              | 41.5                                                                               | 0.0                                                                                 | 10.6                                                                                | 39.0                                                                                | 9.3                                                                                 | 8.9                                                                                 |
| LnGrp LOS                    | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                  | A                                                                                   | B                                                                                   | D                                                                                   | A                                                                                   | A                                                                                   |
| Approach Vol, veh/h          | 474                                                                               |                                                                                   |                                                                                   | 522                                                                               |                                                                                   |                                                                                   | 122                                                                                |                                                                                     |                                                                                     | 132                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 27.4                                                                              |                                                                                   |                                                                                   | 26.4                                                                              |                                                                                   |                                                                                   | 15.2                                                                               |                                                                                     |                                                                                     | 20.1                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                  |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 7.4                                                                               | 35.5                                                                              | 7.6                                                                               | 16.3                                                                              | 5.9                                                                               | 37.0                                                                              | 6.2                                                                                | 17.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 9.5                                                                               | 29.5                                                                              | 9.5                                                                               | 23.5                                                                              | 6.5                                                                               | 32.5                                                                              | 7.5                                                                                | 25.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 3.8                                                                               | 4.3                                                                               | 3.9                                                                               | 9.5                                                                               | 2.7                                                                               | 3.4                                                                               | 2.8                                                                                | 9.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.5                                                                               | 0.0                                                                               | 2.3                                                                               | 0.0                                                                               | 0.4                                                                               | 0.0                                                                                | 2.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 25.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# HCM 6th Signalized Intersection Summary

## 7: 11th Avenue & Lacey Boulevard

10/31/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 83                                                                                | 167                                                                               | 110                                                                               | 42                                                                                | 203                                                                               | 42                                                                                | 259                                                                                | 433                                                                                 | 50                                                                                  | 61                                                                                  | 469                                                                                 | 131                                                                                 |
| Future Volume (veh/h)        | 83                                                                                | 167                                                                               | 110                                                                               | 42                                                                                | 203                                                                               | 42                                                                                | 259                                                                                | 433                                                                                 | 50                                                                                  | 61                                                                                  | 469                                                                                 | 131                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                 |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                               | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 92                                                                                | 186                                                                               | 122                                                                               | 47                                                                                | 226                                                                               | 47                                                                                | 288                                                                                | 481                                                                                 | 56                                                                                  | 68                                                                                  | 521                                                                                 | 146                                                                                 |
| Peak Hour Factor             | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                               | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                  | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 214                                                                               | 445                                                                               | 198                                                                               | 113                                                                               | 372                                                                               | 76                                                                                | 402                                                                                | 1523                                                                                | 177                                                                                 | 96                                                                                  | 1466                                                                                | 654                                                                                 |
| Arrive On Green              | 0.06                                                                              | 0.13                                                                              | 0.13                                                                              | 0.06                                                                              | 0.13                                                                              | 0.13                                                                              | 0.12                                                                               | 0.48                                                                                | 0.48                                                                                | 0.05                                                                                | 0.42                                                                                | 0.42                                                                                |
| Sat Flow, veh/h              | 3428                                                                              | 3526                                                                              | 1572                                                                              | 1767                                                                              | 2916                                                                              | 595                                                                               | 3428                                                                               | 3183                                                                                | 369                                                                                 | 1767                                                                                | 3526                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 92                                                                                | 186                                                                               | 122                                                                               | 47                                                                                | 135                                                                               | 138                                                                               | 288                                                                                | 266                                                                                 | 271                                                                                 | 68                                                                                  | 521                                                                                 | 146                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1714                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 1748                                                                              | 1714                                                                               | 1763                                                                                | 1789                                                                                | 1767                                                                                | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 1.7                                                                               | 3.2                                                                               | 4.8                                                                               | 1.7                                                                               | 4.7                                                                               | 4.9                                                                               | 5.3                                                                                | 6.0                                                                                 | 6.1                                                                                 | 2.5                                                                                 | 6.6                                                                                 | 2.5                                                                                 |
| Cycle Q Clear(g_c), s        | 1.7                                                                               | 3.2                                                                               | 4.8                                                                               | 1.7                                                                               | 4.7                                                                               | 4.9                                                                               | 5.3                                                                                | 6.0                                                                                 | 6.1                                                                                 | 2.5                                                                                 | 6.6                                                                                 | 2.5                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.34                                                                              | 1.00                                                                               |                                                                                     | 0.21                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 214                                                                               | 445                                                                               | 198                                                                               | 113                                                                               | 225                                                                               | 223                                                                               | 402                                                                                | 843                                                                                 | 856                                                                                 | 96                                                                                  | 1466                                                                                | 654                                                                                 |
| V/C Ratio(X)                 | 0.43                                                                              | 0.42                                                                              | 0.62                                                                              | 0.42                                                                              | 0.60                                                                              | 0.62                                                                              | 0.72                                                                               | 0.31                                                                                | 0.32                                                                                | 0.71                                                                                | 0.36                                                                                | 0.22                                                                                |
| Avail Cap(c_a), veh/h        | 290                                                                               | 1455                                                                              | 649                                                                               | 182                                                                               | 760                                                                               | 754                                                                               | 607                                                                                | 843                                                                                 | 856                                                                                 | 248                                                                                 | 1466                                                                                | 654                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 29.3                                                                              | 26.2                                                                              | 26.9                                                                              | 29.2                                                                              | 26.8                                                                              | 26.8                                                                              | 27.6                                                                               | 10.4                                                                                | 10.4                                                                                | 30.2                                                                                | 13.0                                                                                | 5.3                                                                                 |
| Incr Delay (d2), s/veh       | 1.4                                                                               | 0.6                                                                               | 3.1                                                                               | 2.4                                                                               | 2.6                                                                               | 2.8                                                                               | 2.4                                                                                | 1.0                                                                                 | 1.0                                                                                 | 9.1                                                                                 | 0.7                                                                                 | 0.8                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.7                                                                               | 1.3                                                                               | 1.8                                                                               | 0.7                                                                               | 2.0                                                                               | 2.1                                                                               | 2.2                                                                                | 2.2                                                                                 | 2.2                                                                                 | 1.2                                                                                 | 2.4                                                                                 | 1.3                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 30.7                                                                              | 26.8                                                                              | 30.0                                                                              | 31.7                                                                              | 29.3                                                                              | 29.6                                                                              | 30.0                                                                               | 11.4                                                                                | 11.4                                                                                | 39.3                                                                                | 13.7                                                                                | 6.0                                                                                 |
| LnGrp LOS                    | C                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | C                                                                                  | B                                                                                   | B                                                                                   | D                                                                                   | B                                                                                   | A                                                                                   |
| Approach Vol, veh/h          | 400                                                                               |                                                                                   |                                                                                   | 320                                                                               |                                                                                   |                                                                                   | 825                                                                                |                                                                                     |                                                                                     | 735                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 28.7                                                                              |                                                                                   |                                                                                   | 29.8                                                                              |                                                                                   |                                                                                   | 17.9                                                                               |                                                                                     |                                                                                     | 14.5                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                  |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 8.0                                                                               | 35.6                                                                              | 8.6                                                                               | 12.7                                                                              | 12.1                                                                              | 31.5                                                                              | 8.5                                                                                | 12.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 9.1                                                                               | 29.4                                                                              | 6.7                                                                               | 26.8                                                                              | 11.5                                                                              | 27.0                                                                              | 5.5                                                                                | 28.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 4.5                                                                               | 8.1                                                                               | 3.7                                                                               | 6.8                                                                               | 7.3                                                                               | 8.6                                                                               | 3.7                                                                                | 6.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 3.1                                                                               | 0.0                                                                               | 1.4                                                                               | 0.4                                                                               | 3.7                                                                               | 0.0                                                                                | 1.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 20.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary 8: 11th Avenue & 7th Street

10/31/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 37                                                                                | 89                                                                                | 66                                                                                | 73                                                                                | 91                                                                                | 48                                                                                | 154                                                                                 | 432                                                                                 | 98                                                                                  | 71                                                                                  | 292                                                                                 | 64                                                                                  |
| Future Volume (veh/h)        | 37                                                                                | 89                                                                                | 66                                                                                | 73                                                                                | 91                                                                                | 48                                                                                | 154                                                                                 | 432                                                                                 | 98                                                                                  | 71                                                                                  | 292                                                                                 | 64                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 42                                                                                | 101                                                                               | 75                                                                                | 83                                                                                | 103                                                                               | 55                                                                                | 175                                                                                 | 491                                                                                 | 111                                                                                 | 81                                                                                  | 332                                                                                 | 73                                                                                  |
| Peak Hour Factor             | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 143                                                                               | 198                                                                               | 135                                                                               | 109                                                                               | 270                                                                               | 135                                                                               | 221                                                                                 | 1715                                                                                | 765                                                                                 | 108                                                                                 | 1489                                                                                | 664                                                                                 |
| Arrive On Green              | 0.04                                                                              | 0.10                                                                              | 0.10                                                                              | 0.06                                                                              | 0.12                                                                              | 0.12                                                                              | 0.12                                                                                | 0.49                                                                                | 0.49                                                                                | 0.06                                                                                | 0.42                                                                                | 0.42                                                                                |
| Sat Flow, veh/h              | 3428                                                                              | 2002                                                                              | 1370                                                                              | 1767                                                                              | 2273                                                                              | 1140                                                                              | 1767                                                                                | 3526                                                                                | 1572                                                                                | 1767                                                                                | 3526                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 42                                                                                | 88                                                                                | 88                                                                                | 83                                                                                | 78                                                                                | 80                                                                                | 175                                                                                 | 491                                                                                 | 111                                                                                 | 81                                                                                  | 332                                                                                 | 73                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1714                                                                              | 1763                                                                              | 1609                                                                              | 1767                                                                              | 1763                                                                              | 1650                                                                              | 1767                                                                                | 1763                                                                                | 1572                                                                                | 1767                                                                                | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 0.7                                                                               | 2.9                                                                               | 3.2                                                                               | 2.8                                                                               | 2.5                                                                               | 2.7                                                                               | 5.9                                                                                 | 5.1                                                                                 | 1.4                                                                                 | 2.8                                                                                 | 3.7                                                                                 | 1.7                                                                                 |
| Cycle Q Clear(g_c), s        | 0.7                                                                               | 2.9                                                                               | 3.2                                                                               | 2.8                                                                               | 2.5                                                                               | 2.7                                                                               | 5.9                                                                                 | 5.1                                                                                 | 1.4                                                                                 | 2.8                                                                                 | 3.7                                                                                 | 1.7                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.85                                                                              | 1.00                                                                              |                                                                                   | 0.69                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 143                                                                               | 174                                                                               | 159                                                                               | 109                                                                               | 209                                                                               | 196                                                                               | 221                                                                                 | 1715                                                                                | 765                                                                                 | 108                                                                                 | 1489                                                                                | 664                                                                                 |
| V/C Ratio(X)                 | 0.29                                                                              | 0.51                                                                              | 0.55                                                                              | 0.76                                                                              | 0.37                                                                              | 0.41                                                                              | 0.79                                                                                | 0.29                                                                                | 0.15                                                                                | 0.75                                                                                | 0.22                                                                                | 0.11                                                                                |
| Avail Cap(c_a), veh/h        | 278                                                                               | 744                                                                               | 680                                                                               | 215                                                                               | 816                                                                               | 764                                                                               | 359                                                                                 | 1715                                                                                | 765                                                                                 | 281                                                                                 | 1489                                                                                | 664                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 28.6                                                                              | 26.3                                                                              | 26.5                                                                              | 28.4                                                                              | 25.0                                                                              | 25.1                                                                              | 26.2                                                                                | 9.4                                                                                 | 3.1                                                                                 | 28.5                                                                                | 11.3                                                                                | 10.8                                                                                |
| Incr Delay (d2), s/veh       | 1.1                                                                               | 2.3                                                                               | 3.0                                                                               | 10.5                                                                              | 1.1                                                                               | 1.4                                                                               | 6.3                                                                                 | 0.4                                                                                 | 0.4                                                                                 | 10.1                                                                                | 0.3                                                                                 | 0.3                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.3                                                                               | 1.2                                                                               | 1.3                                                                               | 1.5                                                                               | 1.1                                                                               | 1.1                                                                               | 2.7                                                                                 | 1.7                                                                                 | 0.8                                                                                 | 1.4                                                                                 | 1.3                                                                                 | 0.6                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 29.8                                                                              | 28.6                                                                              | 29.5                                                                              | 38.9                                                                              | 26.1                                                                              | 26.5                                                                              | 32.5                                                                                | 9.9                                                                                 | 3.5                                                                                 | 38.5                                                                                | 11.7                                                                                | 11.1                                                                                |
| LnGrp LOS                    | C                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | C                                                                                   | A                                                                                   | A                                                                                   | D                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 218                                                                               |                                                                                   |                                                                                   | 241                                                                               |                                                                                   |                                                                                   | 777                                                                                 |                                                                                     |                                                                                     | 486                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 29.2                                                                              |                                                                                   |                                                                                   | 30.6                                                                              |                                                                                   |                                                                                   | 14.0                                                                                |                                                                                     |                                                                                     | 16.1                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 8.2                                                                               | 34.4                                                                              | 8.3                                                                               | 10.6                                                                              | 12.2                                                                              | 30.5                                                                              | 7.1                                                                                 | 11.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 9.8                                                                               | 28.7                                                                              | 7.5                                                                               | 26.0                                                                              | 12.5                                                                              | 26.0                                                                              | 5.0                                                                                 | 28.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 4.8                                                                               | 7.1                                                                               | 4.8                                                                               | 5.2                                                                               | 7.9                                                                               | 5.7                                                                               | 2.7                                                                                 | 4.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 3.5                                                                               | 0.0                                                                               | 0.9                                                                               | 0.2                                                                               | 2.2                                                                               | 0.0                                                                                 | 0.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 18.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 10: 11th Avenue & 5th Street

10/31/2020

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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |                                                                                   |  |                                                                                   |  |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)       | 21                                                                                | 0                                                                                 | 7                                                                                 | 4                                                                                 | 0                                                                                 | 5                                                                                 | 26                                                                                  | 897                                                                                 | 23                                                                                  | 1                                                                                   | 503                                                                                 | 47                                                                                  |
| Future Volume (veh/h)        | 21                                                                                | 0                                                                                 | 7                                                                                 | 4                                                                                 | 0                                                                                 | 5                                                                                 | 26                                                                                  | 897                                                                                 | 23                                                                                  | 1                                                                                   | 503                                                                                 | 47                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 24                                                                                | 0                                                                                 | 8                                                                                 | 5                                                                                 | 0                                                                                 | 6                                                                                 | 30                                                                                  | 1043                                                                                | 27                                                                                  | 1                                                                                   | 585                                                                                 | 55                                                                                  |
| Peak Hour Factor             | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                                | 0.86                                                                                | 0.86                                                                                | 0.86                                                                                | 0.86                                                                                | 0.86                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 179                                                                               | 0                                                                                 | 66                                                                                | 110                                                                               | 2                                                                                 | 33                                                                                | 58                                                                                  | 2588                                                                                | 67                                                                                  | 3                                                                                   | 2489                                                                                | 1110                                                                                |
| Arrive On Green              | 0.04                                                                              | 0.00                                                                              | 0.04                                                                              | 0.04                                                                              | 0.00                                                                              | 0.04                                                                              | 0.03                                                                                | 0.74                                                                                | 0.74                                                                                | 0.00                                                                                | 0.71                                                                                | 0.71                                                                                |
| Sat Flow, veh/h              | 1399                                                                              | 0                                                                                 | 1572                                                                              | 598                                                                               | 50                                                                                | 777                                                                               | 1767                                                                                | 3511                                                                                | 91                                                                                  | 1767                                                                                | 3526                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 24                                                                                | 0                                                                                 | 8                                                                                 | 11                                                                                | 0                                                                                 | 0                                                                                 | 30                                                                                  | 524                                                                                 | 546                                                                                 | 1                                                                                   | 585                                                                                 | 55                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1399                                                                              | 0                                                                                 | 1572                                                                              | 1424                                                                              | 0                                                                                 | 0                                                                                 | 1767                                                                                | 1763                                                                                | 1839                                                                                | 1767                                                                                | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 0.3                                                                               | 0.0                                                                               | 0.3                                                                               | 0.2                                                                               | 0.0                                                                               | 0.0                                                                               | 1.0                                                                                 | 6.8                                                                                 | 6.8                                                                                 | 0.0                                                                                 | 3.6                                                                                 | 0.7                                                                                 |
| Cycle Q Clear(g_c), s        | 0.9                                                                               | 0.0                                                                               | 0.3                                                                               | 0.6                                                                               | 0.0                                                                               | 0.0                                                                               | 1.0                                                                                 | 6.8                                                                                 | 6.8                                                                                 | 0.0                                                                                 | 3.6                                                                                 | 0.7                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 0.45                                                                              |                                                                                   | 0.55                                                                              | 1.00                                                                                |                                                                                     | 0.05                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 179                                                                               | 0                                                                                 | 66                                                                                | 145                                                                               | 0                                                                                 | 0                                                                                 | 58                                                                                  | 1300                                                                                | 1356                                                                                | 3                                                                                   | 2489                                                                                | 1110                                                                                |
| V/C Ratio(X)                 | 0.13                                                                              | 0.00                                                                              | 0.12                                                                              | 0.08                                                                              | 0.00                                                                              | 0.00                                                                              | 0.52                                                                                | 0.40                                                                                | 0.40                                                                                | 0.35                                                                                | 0.24                                                                                | 0.05                                                                                |
| Avail Cap(c_a), veh/h        | 722                                                                               | 0                                                                                 | 676                                                                               | 722                                                                               | 0                                                                                 | 0                                                                                 | 186                                                                                 | 1300                                                                                | 1356                                                                                | 158                                                                                 | 2489                                                                                | 1110                                                                                |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 28.7                                                                              | 0.0                                                                               | 28.4                                                                              | 28.5                                                                              | 0.0                                                                               | 0.0                                                                               | 29.3                                                                                | 3.0                                                                                 | 3.0                                                                                 | 30.7                                                                                | 3.2                                                                                 | 2.8                                                                                 |
| Incr Delay (d2), s/veh       | 0.3                                                                               | 0.0                                                                               | 0.8                                                                               | 0.2                                                                               | 0.0                                                                               | 0.0                                                                               | 7.1                                                                                 | 0.9                                                                                 | 0.9                                                                                 | 60.2                                                                                | 0.2                                                                                 | 0.1                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.3                                                                               | 0.0                                                                               | 0.1                                                                               | 0.2                                                                               | 0.0                                                                               | 0.0                                                                               | 0.5                                                                                 | 1.5                                                                                 | 1.6                                                                                 | 0.1                                                                                 | 0.8                                                                                 | 0.1                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 29.0                                                                              | 0.0                                                                               | 29.2                                                                              | 28.7                                                                              | 0.0                                                                               | 0.0                                                                               | 36.4                                                                                | 4.0                                                                                 | 3.9                                                                                 | 90.9                                                                                | 3.4                                                                                 | 2.8                                                                                 |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | C                                                                                 | C                                                                                 | A                                                                                 | A                                                                                 | D                                                                                   | A                                                                                   | A                                                                                   | F                                                                                   | A                                                                                   | A                                                                                   |
| Approach Vol, veh/h          | 32                                                                                |                                                                                   |                                                                                   | 11                                                                                |                                                                                   |                                                                                   | 1100                                                                                |                                                                                     |                                                                                     | 641                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 29.0                                                                              |                                                                                   |                                                                                   | 28.7                                                                              |                                                                                   |                                                                                   | 4.8                                                                                 |                                                                                     |                                                                                     | 3.5                                                                                 |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 4                                                                                 |                                                                                   | 5                                                                                 | 6                                                                                 | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 4.6                                                                               | 49.9                                                                              | 7.1                                                                               |                                                                                   | 6.5                                                                               | 48.0                                                                              | 7.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 5.5                                                                               | 44.5                                                                              | 26.5                                                                              |                                                                                   | 6.5                                                                               | 43.5                                                                              | 26.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 2.0                                                                               | 8.8                                                                               | 2.9                                                                               |                                                                                   | 3.0                                                                               | 5.6                                                                               | 2.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 8.7                                                                               | 0.1                                                                               |                                                                                   | 0.0                                                                               | 4.7                                                                               | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 4.9                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 11: 11th Avenue & SR 198 WB On Ramp/4th Street

10/31/2020

|                              |  |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |      |      |                                                                                     |                                                                                     |
|------------------------------|------------------------------------------------------------------------------------|------|-----|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                                | EBT  | EBR | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR  | SBL  | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                    |      |     |  |  |  |  |  |      |      |  |  |
| Traffic Volume (veh/h)       | 0                                                                                  | 0    | 0   | 118                                                                               | 16                                                                                | 218                                                                               | 52                                                                                  | 736                                                                                 | 0    | 0    | 381                                                                                 | 163                                                                                 |
| Future Volume (veh/h)        | 0                                                                                  | 0    | 0   | 118                                                                               | 16                                                                                | 218                                                                               | 52                                                                                  | 736                                                                                 | 0    | 0    | 381                                                                                 | 163                                                                                 |
| Initial Q (Qb), veh          |                                                                                    |      |     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0    | 0    | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          |                                                                                    |      |     | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00 | 1.00 |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             |                                                                                    |      |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00 | 1.00 | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                    |      |     | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |      |      | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       |                                                                                    |      |     | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 0    | 0    | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         |                                                                                    |      |     | 137                                                                               | 19                                                                                | 253                                                                               | 60                                                                                  | 856                                                                                 | 0    | 0    | 443                                                                                 | 190                                                                                 |
| Peak Hour Factor             |                                                                                    |      |     | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                                | 0.86                                                                                | 0.86 | 0.86 | 0.86                                                                                | 0.86                                                                                |
| Percent Heavy Veh, %         |                                                                                    |      |     | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 0    | 0    | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   |                                                                                    |      |     | 357                                                                               | 374                                                                               | 317                                                                               | 89                                                                                  | 2341                                                                                | 0    | 0    | 1927                                                                                | 859                                                                                 |
| Arrive On Green              |                                                                                    |      |     | 0.20                                                                              | 0.20                                                                              | 0.20                                                                              | 0.05                                                                                | 0.66                                                                                | 0.00 | 0.00 | 0.55                                                                                | 0.55                                                                                |
| Sat Flow, veh/h              |                                                                                    |      |     | 1767                                                                              | 1856                                                                              | 1572                                                                              | 1767                                                                                | 3618                                                                                | 0    | 0    | 3618                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         |                                                                                    |      |     | 137                                                                               | 19                                                                                | 253                                                                               | 60                                                                                  | 856                                                                                 | 0    | 0    | 443                                                                                 | 190                                                                                 |
| Grp Sat Flow(s),veh/h/ln     |                                                                                    |      |     | 1767                                                                              | 1856                                                                              | 1572                                                                              | 1767                                                                                | 1763                                                                                | 0    | 0    | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              |                                                                                    |      |     | 4.5                                                                               | 0.6                                                                               | 10.3                                                                              | 2.2                                                                                 | 7.2                                                                                 | 0.0  | 0.0  | 4.4                                                                                 | 4.2                                                                                 |
| Cycle Q Clear(g_c), s        |                                                                                    |      |     | 4.5                                                                               | 0.6                                                                               | 10.3                                                                              | 2.2                                                                                 | 7.2                                                                                 | 0.0  | 0.0  | 4.4                                                                                 | 4.2                                                                                 |
| Prop In Lane                 |                                                                                    |      |     | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 0.00 | 0.00 |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       |                                                                                    |      |     | 357                                                                               | 374                                                                               | 317                                                                               | 89                                                                                  | 2341                                                                                | 0    | 0    | 1927                                                                                | 859                                                                                 |
| V/C Ratio(X)                 |                                                                                    |      |     | 0.38                                                                              | 0.05                                                                              | 0.80                                                                              | 0.68                                                                                | 0.37                                                                                | 0.00 | 0.00 | 0.23                                                                                | 0.22                                                                                |
| Avail Cap(c_a), veh/h        |                                                                                    |      |     | 962                                                                               | 1010                                                                              | 856                                                                               | 330                                                                                 | 2341                                                                                | 0    | 0    | 1927                                                                                | 859                                                                                 |
| HCM Platoon Ratio            |                                                                                    |      |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00 | 1.00 | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           |                                                                                    |      |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 0.00 | 0.00 | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     |                                                                                    |      |     | 23.1                                                                              | 21.6                                                                              | 25.4                                                                              | 31.3                                                                                | 5.0                                                                                 | 0.0  | 0.0  | 7.9                                                                                 | 7.8                                                                                 |
| Incr Delay (d2), s/veh       |                                                                                    |      |     | 0.7                                                                               | 0.1                                                                               | 4.6                                                                               | 8.7                                                                                 | 0.4                                                                                 | 0.0  | 0.0  | 0.3                                                                                 | 0.6                                                                                 |
| Initial Q Delay(d3),s/veh    |                                                                                    |      |     | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0  | 0.0  | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     |                                                                                    |      |     | 1.7                                                                               | 0.2                                                                               | 3.8                                                                               | 1.1                                                                                 | 2.1                                                                                 | 0.0  | 0.0  | 1.4                                                                                 | 1.3                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                    |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |      |      |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         |                                                                                    |      |     | 23.8                                                                              | 21.6                                                                              | 30.0                                                                              | 40.0                                                                                | 5.4                                                                                 | 0.0  | 0.0  | 8.2                                                                                 | 8.4                                                                                 |
| LnGrp LOS                    |                                                                                    |      |     | C                                                                                 | C                                                                                 | C                                                                                 | D                                                                                   | A                                                                                   | A    | A    | A                                                                                   | A                                                                                   |
| Approach Vol, veh/h          |                                                                                    |      |     |                                                                                   | 409                                                                               |                                                                                   |                                                                                     | 916                                                                                 |      |      | 633                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                    |      |     |                                                                                   | 27.6                                                                              |                                                                                   |                                                                                     | 7.7                                                                                 |      |      | 8.2                                                                                 |                                                                                     |
| Approach LOS                 |                                                                                    |      |     |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | A                                                                                   |      |      | A                                                                                   |                                                                                     |
| Timer - Assigned Phs         |                                                                                    | 2    |     |                                                                                   | 5                                                                                 | 6                                                                                 |                                                                                     | 8                                                                                   |      |      |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                    | 49.0 |     |                                                                                   | 7.9                                                                               | 41.1                                                                              |                                                                                     | 18.0                                                                                |      |      |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                    | 4.5  |     |                                                                                   | 4.5                                                                               | 4.5                                                                               |                                                                                     | 4.5                                                                                 |      |      |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                    | 44.5 |     |                                                                                   | 12.5                                                                              | 27.5                                                                              |                                                                                     | 36.5                                                                                |      |      |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                    | 9.2  |     |                                                                                   | 4.2                                                                               | 6.4                                                                               |                                                                                     | 12.3                                                                                |      |      |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                    | 7.2  |     |                                                                                   | 0.1                                                                               | 3.4                                                                               |                                                                                     | 1.3                                                                                 |      |      |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                    |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |      |      |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                    |      |     | 12.0                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |      |      |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                    |      |     | B                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |      |      |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary 12: 11th Avenue & SR 198 EB Off Ramp/3rd Street

10/31/2020

|                              |  |      |      |      |     |      |      |      |      |      |      |      |
|------------------------------|------------------------------------------------------------------------------------|------|------|------|-----|------|------|------|------|------|------|------|
| Movement                     | EBL                                                                                | EBT  | EBR  | WBL  | WBT | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations          |                                                                                    | ↩    | ↪    |      |     |      |      | ↩↪   | ↪    | ↩    | ↩↪   |      |
| Traffic Volume (veh/h)       | 241                                                                                | 140  | 85   | 0    | 0   | 0    | 0    | 549  | 134  | 82   | 420  | 0    |
| Future Volume (veh/h)        | 241                                                                                | 140  | 85   | 0    | 0   | 0    | 0    | 549  | 134  | 82   | 420  | 0    |
| Initial Q (Qb), veh          | 0                                                                                  | 0    | 0    |      |     |      | 0    | 0    | 0    | 0    | 0    | 0    |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                               |      | 1.00 |      |     |      | 1.00 |      | 1.00 | 1.00 |      | 1.00 |
| Parking Bus, Adj             | 1.00                                                                               | 1.00 | 1.00 |      |     |      | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach        |                                                                                    | No   |      |      |     |      |      | No   |      |      | No   |      |
| Adj Sat Flow, veh/h/ln       | 1856                                                                               | 1856 | 1856 |      |     |      | 0    | 1856 | 1856 | 1856 | 1856 | 0    |
| Adj Flow Rate, veh/h         | 301                                                                                | 175  | 106  |      |     |      | 0    | 686  | 168  | 102  | 525  | 0    |
| Peak Hour Factor             | 0.80                                                                               | 0.80 | 0.80 |      |     |      | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| Percent Heavy Veh, %         | 3                                                                                  | 3    | 3    |      |     |      | 0    | 3    | 3    | 3    | 3    | 0    |
| Cap, veh/h                   | 354                                                                                | 206  | 489  |      |     |      | 0    | 1541 | 687  | 132  | 2012 | 0    |
| Arrive On Green              | 0.31                                                                               | 0.31 | 0.31 |      |     |      | 0.00 | 0.44 | 0.44 | 0.07 | 0.57 | 0.00 |
| Sat Flow, veh/h              | 1137                                                                               | 661  | 1572 |      |     |      | 0    | 3618 | 1572 | 1767 | 3618 | 0    |
| Grp Volume(v), veh/h         | 476                                                                                | 0    | 106  |      |     |      | 0    | 686  | 168  | 102  | 525  | 0    |
| Grp Sat Flow(s),veh/h/ln     | 1799                                                                               | 0    | 1572 |      |     |      | 0    | 1763 | 1572 | 1767 | 1763 | 0    |
| Q Serve(g_s), s              | 18.9                                                                               | 0.0  | 3.8  |      |     |      | 0.0  | 10.4 | 5.1  | 4.3  | 5.7  | 0.0  |
| Cycle Q Clear(g_c), s        | 18.9                                                                               | 0.0  | 3.8  |      |     |      | 0.0  | 10.4 | 5.1  | 4.3  | 5.7  | 0.0  |
| Prop In Lane                 | 0.63                                                                               |      | 1.00 |      |     |      | 0.00 |      | 1.00 | 1.00 |      | 0.00 |
| Lane Grp Cap(c), veh/h       | 560                                                                                | 0    | 489  |      |     |      | 0    | 1541 | 687  | 132  | 2012 | 0    |
| V/C Ratio(X)                 | 0.85                                                                               | 0.00 | 0.22 |      |     |      | 0.00 | 0.45 | 0.24 | 0.78 | 0.26 | 0.00 |
| Avail Cap(c_a), veh/h        | 885                                                                                | 0    | 774  |      |     |      | 0    | 1541 | 687  | 276  | 2012 | 0    |
| HCM Platoon Ratio            | 1.00                                                                               | 1.00 | 1.00 |      |     |      | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I)           | 1.00                                                                               | 0.00 | 1.00 |      |     |      | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 |
| Uniform Delay (d), s/veh     | 24.6                                                                               | 0.0  | 19.4 |      |     |      | 0.0  | 15.0 | 13.5 | 34.6 | 8.3  | 0.0  |
| Incr Delay (d2), s/veh       | 4.7                                                                                | 0.0  | 0.2  |      |     |      | 0.0  | 0.9  | 0.8  | 9.3  | 0.3  | 0.0  |
| Initial Q Delay(d3),s/veh    | 0.0                                                                                | 0.0  | 0.0  |      |     |      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile BackOfQ(50%),veh/ln     | 7.9                                                                                | 0.0  | 1.3  |      |     |      | 0.0  | 3.8  | 1.8  | 2.1  | 2.0  | 0.0  |
| Unsig. Movement Delay, s/veh |                                                                                    |      |      |      |     |      |      |      |      |      |      |      |
| LnGrp Delay(d),s/veh         | 29.3                                                                               | 0.0  | 19.6 |      |     |      | 0.0  | 15.9 | 14.4 | 44.0 | 8.6  | 0.0  |
| LnGrp LOS                    | C                                                                                  | A    | B    |      |     |      | A    | B    | B    | D    | A    | A    |
| Approach Vol, veh/h          |                                                                                    | 582  |      |      |     |      |      | 854  |      |      | 627  |      |
| Approach Delay, s/veh        |                                                                                    | 27.5 |      |      |     |      |      | 15.6 |      |      | 14.3 |      |
| Approach LOS                 |                                                                                    | C    |      |      |     |      |      | B    |      |      | B    |      |
| Timer - Assigned Phs         | 1                                                                                  | 2    |      | 4    |     | 6    |      |      |      |      |      |      |
| Phs Duration (G+Y+Rc), s     | 10.2                                                                               | 37.8 |      | 28.2 |     | 48.0 |      |      |      |      |      |      |
| Change Period (Y+Rc), s      | 4.5                                                                                | 4.5  |      | 4.5  |     | 4.5  |      |      |      |      |      |      |
| Max Green Setting (Gmax), s  | 11.9                                                                               | 27.1 |      | 37.5 |     | 43.5 |      |      |      |      |      |      |
| Max Q Clear Time (g_c+I1), s | 6.3                                                                                | 12.4 |      | 20.9 |     | 7.7  |      |      |      |      |      |      |
| Green Ext Time (p_c), s      | 0.1                                                                                | 4.4  |      | 2.8  |     | 4.0  |      |      |      |      |      |      |
| <b>Intersection Summary</b>  |                                                                                    |      |      |      |     |      |      |      |      |      |      |      |
| HCM 6th Ctrl Delay           |                                                                                    |      | 18.6 |      |     |      |      |      |      |      |      |      |
| HCM 6th LOS                  |                                                                                    |      | B    |      |     |      |      |      |      |      |      |      |

HCM 6th AWSC  
5: Campus Dr/Campus Drive & 7th Street

10/31/2020

| Intersection              |     |
|---------------------------|-----|
| Intersection Delay, s/veh | 9.9 |
| Intersection LOS          | A   |

| Movement            | EBL                                                                               | EBT                                                                               | EBR  | WBL                                                                               | WBT                                                                               | WBR  | NBL  | NBT                                                                                 | NBR  | SBL  | SBT                                                                                 | SBR  |
|---------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|
| Lane Configurations |  |  |      |  |  |      |      |  |      |      |  |      |
| Traffic Vol, veh/h  | 82                                                                                | 117                                                                               | 16   | 18                                                                                | 144                                                                               | 31   | 22   | 56                                                                                  | 14   | 22   | 30                                                                                  | 33   |
| Future Vol, veh/h   | 82                                                                                | 117                                                                               | 16   | 18                                                                                | 144                                                                               | 31   | 22   | 56                                                                                  | 14   | 22   | 30                                                                                  | 33   |
| Peak Hour Factor    | 0.79                                                                              | 0.79                                                                              | 0.79 | 0.79                                                                              | 0.79                                                                              | 0.79 | 0.79 | 0.79                                                                                | 0.79 | 0.79 | 0.79                                                                                | 0.79 |
| Heavy Vehicles, %   | 3                                                                                 | 3                                                                                 | 3    | 3                                                                                 | 3                                                                                 | 3    | 3    | 3                                                                                   | 3    | 3    | 3                                                                                   | 3    |
| Mvmt Flow           | 104                                                                               | 148                                                                               | 20   | 23                                                                                | 182                                                                               | 39   | 28   | 71                                                                                  | 18   | 28   | 38                                                                                  | 42   |
| Number of Lanes     | 1                                                                                 | 1                                                                                 | 0    | 1                                                                                 | 1                                                                                 | 0    | 0    | 1                                                                                   | 0    | 0    | 1                                                                                   | 0    |

| Approach                   | EB  | WB   | NB  | SB  |
|----------------------------|-----|------|-----|-----|
| Opposing Approach          | WB  | EB   | SB  | NB  |
| Opposing Lanes             | 2   | 2    | 1   | 1   |
| Conflicting Approach Left  | SB  | NB   | EB  | WB  |
| Conflicting Lanes Left     | 1   | 1    | 2   | 2   |
| Conflicting Approach Right | NB  | SB   | WB  | EB  |
| Conflicting Lanes Right    | 1   | 1    | 2   | 2   |
| HCM Control Delay          | 9.8 | 10.5 | 9.5 | 9.3 |
| HCM LOS                    | A   | B    | A   | A   |

| Lane                   | NBLn1 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | SBLn1 |
|------------------------|-------|-------|-------|-------|-------|-------|
| Vol Left, %            | 24%   | 100%  | 0%    | 100%  | 0%    | 26%   |
| Vol Thru, %            | 61%   | 0%    | 88%   | 0%    | 82%   | 35%   |
| Vol Right, %           | 15%   | 0%    | 12%   | 0%    | 18%   | 39%   |
| Sign Control           | Stop  | Stop  | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 92    | 82    | 133   | 18    | 175   | 85    |
| LT Vol                 | 22    | 82    | 0     | 18    | 0     | 22    |
| Through Vol            | 56    | 0     | 117   | 0     | 144   | 30    |
| RT Vol                 | 14    | 0     | 16    | 0     | 31    | 33    |
| Lane Flow Rate         | 116   | 104   | 168   | 23    | 222   | 108   |
| Geometry Grp           | 2     | 7     | 7     | 7     | 7     | 2     |
| Degree of Util (X)     | 0.172 | 0.17  | 0.248 | 0.038 | 0.326 | 0.156 |
| Departure Headway (Hd) | 5.329 | 5.888 | 5.298 | 5.931 | 5.302 | 5.21  |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 666   | 604   | 672   | 599   | 671   | 681   |
| Service Time           | 3.419 | 3.673 | 3.083 | 3.718 | 3.088 | 3.301 |
| HCM Lane V/C Ratio     | 0.174 | 0.172 | 0.25  | 0.038 | 0.331 | 0.159 |
| HCM Control Delay      | 9.5   | 9.9   | 9.8   | 9     | 10.7  | 9.3   |
| HCM Lane LOS           | A     | A     | A     | A     | B     | A     |
| HCM 95th-tile Q        | 0.6   | 0.6   | 1     | 0.1   | 1.4   | 0.6   |

HCM 6th TWSC  
1: 12th Avenue & Glendale Avenue

10/31/2020

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 5.4  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      |      | ↰    |      |      | ↰    | ↑↑↑  | ↑↑↑  |      | ↰    | ↑↑↑  | ↰    |
| Traffic Vol, veh/h       | 0    | 0    | 165  | 0    | 0    | 98   | 0    | 1702 | 29   | 36   | 1769 | 161  |
| Future Vol, veh/h        | 0    | 0    | 165  | 0    | 0    | 98   | 0    | 1702 | 29   | 36   | 1769 | 161  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | 0    | -    | -    | 0    | -    | -    | -    | 125  | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    |
| Mvmt Flow                | 0    | 0    | 179  | 0    | 0    | 107  | 0    | 1850 | 32   | 39   | 1923 | 175  |

| Major/Minor          | Minor2 |   | Minor1 |   | Major1 |      | Major2 |      |
|----------------------|--------|---|--------|---|--------|------|--------|------|
| Conflicting Flow All | -      | - | 1049   | - | -      | 941  | -      | 0    |
| Stage 1              | -      | - | -      | - | -      | -    | -      | -    |
| Stage 2              | -      | - | -      | - | -      | -    | -      | -    |
| Critical Hdwy        | -      | - | 7.16   | - | -      | 7.16 | -      | 5.36 |
| Critical Hdwy Stg 1  | -      | - | -      | - | -      | -    | -      | -    |
| Critical Hdwy Stg 2  | -      | - | -      | - | -      | -    | -      | -    |
| Follow-up Hdwy       | -      | - | 3.93   | - | -      | 3.93 | -      | 3.13 |
| Pot Cap-1 Maneuver   | 0      | 0 | 191    | 0 | 0      | 226  | 0      | 142  |
| Stage 1              | 0      | 0 | -      | 0 | 0      | -    | -      | -    |
| Stage 2              | 0      | 0 | -      | 0 | 0      | -    | -      | -    |
| Platoon blocked, %   | -      | - | -      | - | -      | -    | -      | -    |
| Mov Cap-1 Maneuver   | -      | - | 191    | - | -      | 226  | -      | 142  |
| Mov Cap-2 Maneuver   | -      | - | -      | - | -      | -    | -      | -    |
| Stage 1              | -      | - | -      | - | -      | -    | -      | -    |
| Stage 2              | -      | - | -      | - | -      | -    | -      | -    |

| Approach             | EB    | WB   | NB | SB  |
|----------------------|-------|------|----|-----|
| HCM Control Delay, s | 100.4 | 34.4 | 0  | 0.7 |
| HCM LOS              | F     | D    |    |     |

| Minor Lane/Major Mvmt | NBT | NBR | EBLn1WBLn1 | SBL   | SBT   | SBR |
|-----------------------|-----|-----|------------|-------|-------|-----|
| Capacity (veh/h)      | -   | -   | 191        | 226   | 142   | -   |
| HCM Lane V/C Ratio    | -   | -   | 0.939      | 0.471 | 0.276 | -   |
| HCM Control Delay (s) | -   | -   | 100.4      | 34.4  | 39.7  | -   |
| HCM Lane LOS          | -   | -   | F          | D     | E     | -   |
| HCM 95th %tile Q(veh) | -   | -   | 7.5        | 2.3   | 1.1   | -   |



HCM 6th TWSC  
6: Campus Dr & 6th Street

10/31/2020

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 7.7  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 12   | 8    | 0    | 0    | 4    | 69   | 0    | 1    | 0    | 61   | 1    | 14   |
| Future Vol, veh/h        | 12   | 8    | 0    | 0    | 4    | 69   | 0    | 1    | 0    | 61   | 1    | 14   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 78   | 78   | 78   | 78   | 78   | 78   | 78   | 78   | 78   | 78   | 78   | 78   |
| Heavy Vehicles, %        | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    |
| Mvmt Flow                | 15   | 10   | 0    | 0    | 5    | 88   | 0    | 1    | 0    | 78   | 1    | 18   |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       | Major2 |   |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|--------|---|---|-------|---|---|
| Conflicting Flow All | 214    | 167   | 10     | 172   | 176    | 1     | 19     | 0 | 0 | 1     | 0 | 0 |
| Stage 1              | 166    | 166   | -      | 1     | 1      | -     | -      | - | - | -     | - | - |
| Stage 2              | 48     | 1     | -      | 171   | 175    | -     | -      | - | - | -     | - | - |
| Critical Hdwy        | 7.13   | 6.53  | 6.23   | 7.13  | 6.53   | 6.23  | 4.13   | - | - | 4.13  | - | - |
| Critical Hdwy Stg 1  | 6.13   | 5.53  | -      | 6.13  | 5.53   | -     | -      | - | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.13   | 5.53  | -      | 6.13  | 5.53   | -     | -      | - | - | -     | - | - |
| Follow-up Hdwy       | 3.527  | 4.027 | 3.327  | 3.527 | 4.027  | 3.327 | 2.227  | - | - | 2.227 | - | - |
| Pot Cap-1 Maneuver   | 741    | 724   | 1068   | 789   | 716    | 1081  | 1591   | - | - | 1615  | - | - |
| Stage 1              | 834    | 759   | -      | 1019  | 893    | -     | -      | - | - | -     | - | - |
| Stage 2              | 963    | 893   | -      | 829   | 752    | -     | -      | - | - | -     | - | - |
| Platoon blocked, %   |        |       |        |       |        |       |        | - | - | -     | - | - |
| Mov Cap-1 Maneuver   | 651    | 689   | 1068   | 751   | 681    | 1081  | 1591   | - | - | 1615  | - | - |
| Mov Cap-2 Maneuver   | 651    | 689   | -      | 751   | 681    | -     | -      | - | - | -     | - | - |
| Stage 1              | 834    | 722   | -      | 1019  | 893    | -     | -      | - | - | -     | - | - |
| Stage 2              | 879    | 893   | -      | 777   | 715    | -     | -      | - | - | -     | - | - |

| Approach             | EB   |  | WB  |  | NB |  | SB  |  |
|----------------------|------|--|-----|--|----|--|-----|--|
| HCM Control Delay, s | 10.6 |  | 8.8 |  | 0  |  | 5.9 |  |
| HCM LOS              | B    |  | A   |  |    |  |     |  |

| Minor Lane/Major Mvmt | NBL  | NBT | NBR | EBLn1WBLn1  | SBL   | SBT | SBR |
|-----------------------|------|-----|-----|-------------|-------|-----|-----|
| Capacity (veh/h)      | 1591 | -   | -   | 666 1047    | 1615  | -   | -   |
| HCM Lane V/C Ratio    | -    | -   | -   | 0.039 0.089 | 0.048 | -   | -   |
| HCM Control Delay (s) | 0    | -   | -   | 10.6 8.8    | 7.3   | 0   | -   |
| HCM Lane LOS          | A    | -   | -   | B A         | A     | A   | -   |
| HCM 95th %tile Q(veh) | 0    | -   | -   | 0.1 0.3     | 0.2   | -   | -   |

| Intersection             |      |      |                                                                                   |      |      |                                                                                   |                                                                                   |                                                                                   |      |                                                                                     |                                                                                     |      |
|--------------------------|------|------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 2.4  |      |                                                                                   |      |      |                                                                                   |                                                                                   |                                                                                   |      |                                                                                     |                                                                                     |      |
| Movement                 | EBL  | EBT  | EBR                                                                               | WBL  | WBT  | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR  | SBL                                                                                 | SBT                                                                                 | SBR  |
| Lane Configurations      |      |      |  |      |      |  |  |  |      |  |  |      |
| Traffic Vol, veh/h       | 0    | 0    | 68                                                                                | 0    | 0    | 161                                                                               | 98                                                                                | 1022                                                                              | 105  | 107                                                                                 | 1086                                                                                | 8    |
| Future Vol, veh/h        | 0    | 0    | 68                                                                                | 0    | 0    | 161                                                                               | 98                                                                                | 1022                                                                              | 105  | 107                                                                                 | 1086                                                                                | 8    |
| Conflicting Peds, #/hr   | 0    | 0    | 0                                                                                 | 0    | 0    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                   | 0                                                                                   | 0    |
| Sign Control             | Stop | Stop | Stop                                                                              | Stop | Stop | Stop                                                                              | Free                                                                              | Free                                                                              | Free | Free                                                                                | Free                                                                                | Free |
| RT Channelized           | -    | -    | None                                                                              | -    | -    | None                                                                              | -                                                                                 | -                                                                                 | None | -                                                                                   | -                                                                                   | None |
| Storage Length           | -    | -    | 0                                                                                 | -    | -    | 0                                                                                 | 75                                                                                | -                                                                                 | -    | 125                                                                                 | -                                                                                   | -    |
| Veh in Median Storage, # | -    | 0    | -                                                                                 | -    | 0    | -                                                                                 | -                                                                                 | 0                                                                                 | -    | -                                                                                   | 0                                                                                   | -    |
| Grade, %                 | -    | 0    | -                                                                                 | -    | 0    | -                                                                                 | -                                                                                 | 0                                                                                 | -    | -                                                                                   | 0                                                                                   | -    |
| Peak Hour Factor         | 97   | 97   | 97                                                                                | 97   | 97   | 97                                                                                | 97                                                                                | 97                                                                                | 97   | 97                                                                                  | 97                                                                                  | 97   |
| Heavy Vehicles, %        | 3    | 3    | 3                                                                                 | 3    | 3    | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3    | 3                                                                                   | 3                                                                                   | 3    |
| Mvmt Flow                | 0    | 0    | 70                                                                                | 0    | 0    | 166                                                                               | 101                                                                               | 1054                                                                              | 108  | 110                                                                                 | 1120                                                                                | 8    |

| Major/Minor          | Minor2 |   | Minor1 |   | Major1 |      | Major2 |   |
|----------------------|--------|---|--------|---|--------|------|--------|---|
| Conflicting Flow All | -      | - | 564    | - | -      | 581  | 1128   | 0 |
| Stage 1              | -      | - | -      | - | -      | -    | -      | - |
| Stage 2              | -      | - | -      | - | -      | -    | -      | - |
| Critical Hdwy        | -      | - | 6.96   | - | -      | 6.96 | 4.16   | - |
| Critical Hdwy Stg 1  | -      | - | -      | - | -      | -    | -      | - |
| Critical Hdwy Stg 2  | -      | - | -      | - | -      | -    | -      | - |
| Follow-up Hdwy       | -      | - | 3.33   | - | -      | 3.33 | 2.23   | - |
| Pot Cap-1 Maneuver   | 0      | 0 | 466    | 0 | 0      | 454  | 609    | - |
| Stage 1              | 0      | 0 | -      | 0 | 0      | -    | -      | - |
| Stage 2              | 0      | 0 | -      | 0 | 0      | -    | -      | - |
| Platoon blocked, %   | -      | - | -      | - | -      | -    | -      | - |
| Mov Cap-1 Maneuver   | -      | - | 466    | - | -      | 454  | 609    | - |
| Mov Cap-2 Maneuver   | -      | - | -      | - | -      | -    | -      | - |
| Stage 1              | -      | - | -      | - | -      | -    | -      | - |
| Stage 2              | -      | - | -      | - | -      | -    | -      | - |

| Approach             | EB   | WB   | NB | SB  |
|----------------------|------|------|----|-----|
| HCM Control Delay, s | 14.1 | 17.4 | 1  | 1.1 |
| HCM LOS              | B    | C    |    |     |

| Minor Lane/Major Mvmt | NBL   | NBT | NBR | EBLn1WBLn1 | SBL   | SBT   | SBR |
|-----------------------|-------|-----|-----|------------|-------|-------|-----|
| Capacity (veh/h)      | 609   | -   | -   | 466        | 454   | 591   | -   |
| HCM Lane V/C Ratio    | 0.166 | -   | -   | 0.15       | 0.366 | 0.187 | -   |
| HCM Control Delay (s) | 12.1  | -   | -   | 14.1       | 17.4  | 12.5  | -   |
| HCM Lane LOS          | B     | -   | -   | B          | C     | B     | -   |
| HCM 95th %tile Q(veh) | 0.6   | -   | -   | 0.5        | 1.7   | 0.7   | -   |

# HCM 6th Signalized Intersection Summary

## 2: SR 198 WB Ramps & 12th Avenue

10/31/2020

|                              |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | WBL                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                                 | SBR                                                                                 | NEL                                                                                 | NER                                                                                 |
| Lane Configurations          |  |  |  |  |                                                                                   |                                                                                   |  |  |                                                                                     |                                                                                     |
| Traffic Volume (veh/h)       | 143                                                                               | 540                                                                               | 46                                                                                | 1195                                                                              | 0                                                                                 | 0                                                                                 | 1283                                                                                | 657                                                                                 | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 143                                                                               | 540                                                                               | 46                                                                                | 1195                                                                              | 0                                                                                 | 0                                                                                 | 1283                                                                                | 657                                                                                 | 0                                                                                   | 0                                                                                   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 0                                                                                 | 0                                                                                 | 1856                                                                                | 1856                                                                                |                                                                                     |                                                                                     |
| Adj Flow Rate, veh/h         | 155                                                                               | 587                                                                               | 50                                                                                | 1299                                                                              | 0                                                                                 | 0                                                                                 | 1395                                                                                | 714                                                                                 |                                                                                     |                                                                                     |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                |                                                                                     |                                                                                     |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 3                                                                                   | 3                                                                                   |                                                                                     |                                                                                     |
| Cap, veh/h                   | 391                                                                               | 696                                                                               | 72                                                                                | 2373                                                                              | 0                                                                                 | 0                                                                                 | 2044                                                                                | 912                                                                                 |                                                                                     |                                                                                     |
| Arrive On Green              | 0.22                                                                              | 0.22                                                                              | 0.04                                                                              | 0.67                                                                              | 0.00                                                                              | 0.00                                                                              | 0.58                                                                                | 0.58                                                                                |                                                                                     |                                                                                     |
| Sat Flow, veh/h              | 1767                                                                              | 3145                                                                              | 1767                                                                              | 3618                                                                              | 0                                                                                 | 0                                                                                 | 3618                                                                                | 1572                                                                                |                                                                                     |                                                                                     |
| Grp Volume(v), veh/h         | 155                                                                               | 587                                                                               | 50                                                                                | 1299                                                                              | 0                                                                                 | 0                                                                                 | 1395                                                                                | 714                                                                                 |                                                                                     |                                                                                     |
| Grp Sat Flow(s),veh/h/ln     | 1767                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 0                                                                                 | 0                                                                                 | 1763                                                                                | 1572                                                                                |                                                                                     |                                                                                     |
| Q Serve(g_s), s              | 6.4                                                                               | 15.3                                                                              | 2.4                                                                               | 16.3                                                                              | 0.0                                                                               | 0.0                                                                               | 23.5                                                                                | 29.8                                                                                |                                                                                     |                                                                                     |
| Cycle Q Clear(g_c), s        | 6.4                                                                               | 15.3                                                                              | 2.4                                                                               | 16.3                                                                              | 0.0                                                                               | 0.0                                                                               | 23.5                                                                                | 29.8                                                                                |                                                                                     |                                                                                     |
| Prop In Lane                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 0.00                                                                              |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |
| Lane Grp Cap(c), veh/h       | 391                                                                               | 696                                                                               | 72                                                                                | 2373                                                                              | 0                                                                                 | 0                                                                                 | 2044                                                                                | 912                                                                                 |                                                                                     |                                                                                     |
| V/C Ratio(X)                 | 0.40                                                                              | 0.84                                                                              | 0.70                                                                              | 0.55                                                                              | 0.00                                                                              | 0.00                                                                              | 0.68                                                                                | 0.78                                                                                |                                                                                     |                                                                                     |
| Avail Cap(c_a), veh/h        | 486                                                                               | 865                                                                               | 114                                                                               | 2373                                                                              | 0                                                                                 | 0                                                                                 | 2044                                                                                | 912                                                                                 |                                                                                     |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Uniform Delay (d), s/veh     | 28.4                                                                              | 31.8                                                                              | 40.4                                                                              | 7.2                                                                               | 0.0                                                                               | 0.0                                                                               | 12.5                                                                                | 13.8                                                                                |                                                                                     |                                                                                     |
| Incr Delay (d2), s/veh       | 0.7                                                                               | 6.3                                                                               | 11.4                                                                              | 0.9                                                                               | 0.0                                                                               | 0.0                                                                               | 1.9                                                                                 | 6.7                                                                                 |                                                                                     |                                                                                     |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |
| %ile BackOfQ(50%),veh/ln     | 2.6                                                                               | 6.0                                                                               | 1.2                                                                               | 4.8                                                                               | 0.0                                                                               | 0.0                                                                               | 8.2                                                                                 | 10.3                                                                                |                                                                                     |                                                                                     |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 29.0                                                                              | 38.1                                                                              | 51.9                                                                              | 8.1                                                                               | 0.0                                                                               | 0.0                                                                               | 14.3                                                                                | 20.5                                                                                |                                                                                     |                                                                                     |
| LnGrp LOS                    | C                                                                                 | D                                                                                 | D                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 | B                                                                                   | C                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          | 742                                                                               |                                                                                   |                                                                                   | 1349                                                                              |                                                                                   |                                                                                   | 2109                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 36.2                                                                              |                                                                                   |                                                                                   | 9.8                                                                               |                                                                                   |                                                                                   | 16.4                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | D                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 2                                                                                 |                                                                                   | 5                                                                                 |                                                                                   | 6                                                                                 |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 62.0                                                                              |                                                                                   | 8.0                                                                               |                                                                                   | 54.0                                                                              |                                                                                   | 23.4                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 57.5                                                                              |                                                                                   | 5.5                                                                               |                                                                                   | 47.5                                                                              |                                                                                   | 23.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 18.3                                                                              |                                                                                   | 4.4                                                                               |                                                                                   | 31.8                                                                              |                                                                                   | 17.3                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 12.1                                                                              |                                                                                   | 0.0                                                                               |                                                                                   | 10.9                                                                              |                                                                                   | 1.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 17.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary 3: 12th Avenue & SR 198 EB Off Ramps

10/31/2020

|                              |                                                                                    |  |  |  |  |  |  |                                                                                      |  |  |                                                                                      |  |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                                                                                                                 | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                                                                                                     | NBR                                                                                 | SBL                                                                                 | SBT                                                                                                                                                                     | SBR                                                                                 |
| Lane Configurations          |   |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |   |  |                                                                                     |   |  |
| Traffic Volume (veh/h)       | 571                                                                                                                                                                 | 0                                                                                 | 49                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 660                                                                                                                                                                     | 143                                                                                 | 0                                                                                   | 881                                                                                                                                                                     | 554                                                                                 |
| Future Volume (veh/h)        | 571                                                                                                                                                                 | 0                                                                                 | 49                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 660                                                                                                                                                                     | 143                                                                                 | 0                                                                                   | 881                                                                                                                                                                     | 554                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 0                                                                                                                                                                       | 0                                                                                   | 0                                                                                   | 0                                                                                                                                                                       | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                                                                                                                |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                                                                                                         | 1.00                                                                                | 1.00                                                                                |                                                                                                                                                                         | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                                                                                                         |                                                                                     | No                                                                                  |                                                                                                                                                                         |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                                                                                                                | 0                                                                                 | 1856                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1856                                                                                                                                                                    | 1856                                                                                | 0                                                                                   | 1856                                                                                                                                                                    | 1856                                                                                |
| Adj Flow Rate, veh/h         | 614                                                                                                                                                                 | 0                                                                                 | 53                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 710                                                                                                                                                                     | 0                                                                                   | 0                                                                                   | 947                                                                                                                                                                     | 0                                                                                   |
| Peak Hour Factor             | 0.93                                                                                                                                                                | 0.93                                                                              | 0.93                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.93                                                                                | 0.93                                                                                                                                                                    | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                                                                                                    | 0.93                                                                                |
| Percent Heavy Veh, %         | 3                                                                                                                                                                   | 0                                                                                 | 3                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 3                                                                                                                                                                       | 3                                                                                   | 0                                                                                   | 3                                                                                                                                                                       | 3                                                                                   |
| Cap, veh/h                   | 767                                                                                                                                                                 | 0                                                                                 | 352                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2323                                                                                                                                                                    |                                                                                     | 0                                                                                   | 2323                                                                                                                                                                    |                                                                                     |
| Arrive On Green              | 0.22                                                                                                                                                                | 0.00                                                                              | 0.22                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 0.66                                                                                                                                                                    | 0.00                                                                                | 0.00                                                                                | 0.66                                                                                                                                                                    | 0.00                                                                                |
| Sat Flow, veh/h              | 3428                                                                                                                                                                | 0                                                                                 | 1572                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 3618                                                                                                                                                                    | 1572                                                                                | 0                                                                                   | 3618                                                                                                                                                                    | 1572                                                                                |
| Grp Volume(v), veh/h         | 614                                                                                                                                                                 | 0                                                                                 | 53                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 710                                                                                                                                                                     | 0                                                                                   | 0                                                                                   | 947                                                                                                                                                                     | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1714                                                                                                                                                                | 0                                                                                 | 1572                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1763                                                                                                                                                                    | 1572                                                                                | 0                                                                                   | 1763                                                                                                                                                                    | 1572                                                                                |
| Q Serve(g_s), s              | 13.0                                                                                                                                                                | 0.0                                                                               | 2.1                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 6.6                                                                                                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 9.6                                                                                                                                                                     | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 13.0                                                                                                                                                                | 0.0                                                                               | 2.1                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 6.6                                                                                                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 9.6                                                                                                                                                                     | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                                                                                                                |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                |                                                                                                                                                                         | 1.00                                                                                | 0.00                                                                                |                                                                                                                                                                         | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 767                                                                                                                                                                 | 0                                                                                 | 352                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2323                                                                                                                                                                    |                                                                                     | 0                                                                                   | 2323                                                                                                                                                                    |                                                                                     |
| V/C Ratio(X)                 | 0.80                                                                                                                                                                | 0.00                                                                              | 0.15                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 0.31                                                                                                                                                                    |                                                                                     | 0.00                                                                                | 0.41                                                                                                                                                                    |                                                                                     |
| Avail Cap(c_a), veh/h        | 1364                                                                                                                                                                | 0                                                                                 | 626                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2323                                                                                                                                                                    |                                                                                     | 0                                                                                   | 2323                                                                                                                                                                    |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                                                                                                                | 0.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 1.00                                                                                                                                                                    | 0.00                                                                                | 0.00                                                                                | 1.00                                                                                                                                                                    | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 28.1                                                                                                                                                                | 0.0                                                                               | 23.9                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 5.6                                                                                                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 6.1                                                                                                                                                                     | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 2.0                                                                                                                                                                 | 0.0                                                                               | 0.2                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 0.3                                                                                                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.5                                                                                                                                                                     | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                                                                                                                 | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 0.0                                                                                                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                                                                                                     | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 5.0                                                                                                                                                                 | 0.0                                                                               | 0.7                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 1.8                                                                                                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 2.7                                                                                                                                                                     | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                                                                                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| LnGrp Delay(d),s/veh         | 30.1                                                                                                                                                                | 0.0                                                                               | 24.1                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 5.9                                                                                                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 6.6                                                                                                                                                                     | 0.0                                                                                 |
| LnGrp LOS                    | C                                                                                                                                                                   | A                                                                                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | A                                                                                   | A                                                                                                                                                                       |                                                                                     | A                                                                                   | A                                                                                                                                                                       |                                                                                     |
| Approach Vol, veh/h          | 667                                                                                                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 710                                                                                 |                                                                                                                                                                         |                                                                                     | A                                                                                   |                                                                                                                                                                         |                                                                                     |
| Approach Delay, s/veh        | 29.6                                                                                                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 5.9                                                                                 |                                                                                                                                                                         |                                                                                     | 6.6                                                                                 |                                                                                                                                                                         |                                                                                     |
| Approach LOS                 | C                                                                                                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | A                                                                                   |                                                                                                                                                                         |                                                                                     | A                                                                                   |                                                                                                                                                                         |                                                                                     |
| Timer - Assigned Phs         | 2                                                                                                                                                                   |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                   |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 55.0                                                                                                                                                                |                                                                                   |                                                                                   | 21.6                                                                              |                                                                                   |                                                                                   | 55.0                                                                                |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                                                                                                                 |                                                                                   |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                   | 4.5                                                                                 |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Max Green Setting (Gmax), s  | 50.5                                                                                                                                                                |                                                                                   |                                                                                   | 30.5                                                                              |                                                                                   |                                                                                   | 50.5                                                                                |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 8.6                                                                                                                                                                 |                                                                                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                   | 11.6                                                                                |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Green Ext Time (p_c), s      | 5.2                                                                                                                                                                 |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   |                                                                                   | 7.6                                                                                 |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Intersection Summary         |                                                                                                                                                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                                                                                                     |                                                                                   | 13.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| HCM 6th LOS                  |                                                                                                                                                                     |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Notes                        |                                                                                                                                                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 4: Campus Drive & Lacey Boulevard

10/31/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 30                                                                                | 740                                                                               | 33                                                                                | 52                                                                                | 820                                                                               | 43                                                                                | 36                                                                                  | 68                                                                                  | 118                                                                                 | 100                                                                                 | 86                                                                                  | 34                                                                                  |
| Future Volume (veh/h)        | 30                                                                                | 740                                                                               | 33                                                                                | 52                                                                                | 820                                                                               | 43                                                                                | 36                                                                                  | 68                                                                                  | 118                                                                                 | 100                                                                                 | 86                                                                                  | 34                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 34                                                                                | 851                                                                               | 38                                                                                | 60                                                                                | 943                                                                               | 49                                                                                | 41                                                                                  | 78                                                                                  | 136                                                                                 | 115                                                                                 | 99                                                                                  | 39                                                                                  |
| Peak Hour Factor             | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                                | 0.87                                                                                | 0.87                                                                                | 0.87                                                                                | 0.87                                                                                | 0.87                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 59                                                                                | 1103                                                                              | 492                                                                               | 82                                                                                | 1149                                                                              | 513                                                                               | 66                                                                                  | 200                                                                                 | 349                                                                                 | 147                                                                                 | 696                                                                                 | 590                                                                                 |
| Arrive On Green              | 0.03                                                                              | 0.31                                                                              | 0.31                                                                              | 0.05                                                                              | 0.33                                                                              | 0.33                                                                              | 0.04                                                                                | 0.33                                                                                | 0.33                                                                                | 0.08                                                                                | 0.38                                                                                | 0.38                                                                                |
| Sat Flow, veh/h              | 1767                                                                              | 3526                                                                              | 1572                                                                              | 1767                                                                              | 3526                                                                              | 1572                                                                              | 1767                                                                                | 607                                                                                 | 1058                                                                                | 1767                                                                                | 1856                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 34                                                                                | 851                                                                               | 38                                                                                | 60                                                                                | 943                                                                               | 49                                                                                | 41                                                                                  | 0                                                                                   | 214                                                                                 | 115                                                                                 | 99                                                                                  | 39                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1767                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                                | 0                                                                                   | 1665                                                                                | 1767                                                                                | 1856                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 1.5                                                                               | 17.3                                                                              | 1.3                                                                               | 2.6                                                                               | 19.4                                                                              | 1.7                                                                               | 1.8                                                                                 | 0.0                                                                                 | 7.8                                                                                 | 5.0                                                                                 | 2.8                                                                                 | 1.3                                                                                 |
| Cycle Q Clear(g_c), s        | 1.5                                                                               | 17.3                                                                              | 1.3                                                                               | 2.6                                                                               | 19.4                                                                              | 1.7                                                                               | 1.8                                                                                 | 0.0                                                                                 | 7.8                                                                                 | 5.0                                                                                 | 2.8                                                                                 | 1.3                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 0.64                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 59                                                                                | 1103                                                                              | 492                                                                               | 82                                                                                | 1149                                                                              | 513                                                                               | 66                                                                                  | 0                                                                                   | 549                                                                                 | 147                                                                                 | 696                                                                                 | 590                                                                                 |
| V/C Ratio(X)                 | 0.58                                                                              | 0.77                                                                              | 0.08                                                                              | 0.73                                                                              | 0.82                                                                              | 0.10                                                                              | 0.62                                                                                | 0.00                                                                                | 0.39                                                                                | 0.78                                                                                | 0.14                                                                                | 0.07                                                                                |
| Avail Cap(c_a), veh/h        | 123                                                                               | 1318                                                                              | 588                                                                               | 146                                                                               | 1363                                                                              | 608                                                                               | 143                                                                                 | 0                                                                                   | 549                                                                                 | 235                                                                                 | 696                                                                                 | 590                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 37.6                                                                              | 24.6                                                                              | 19.1                                                                              | 37.1                                                                              | 24.5                                                                              | 18.5                                                                              | 37.4                                                                                | 0.0                                                                                 | 20.3                                                                                | 35.5                                                                                | 16.3                                                                                | 15.8                                                                                |
| Incr Delay (d2), s/veh       | 8.7                                                                               | 2.4                                                                               | 0.1                                                                               | 11.8                                                                              | 3.6                                                                               | 0.1                                                                               | 9.0                                                                                 | 0.0                                                                                 | 2.1                                                                                 | 8.9                                                                                 | 0.4                                                                                 | 0.2                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.8                                                                               | 7.1                                                                               | 0.5                                                                               | 1.4                                                                               | 8.1                                                                               | 0.6                                                                               | 0.9                                                                                 | 0.0                                                                                 | 3.2                                                                                 | 2.5                                                                                 | 1.2                                                                                 | 0.5                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 46.3                                                                              | 26.9                                                                              | 19.2                                                                              | 49.0                                                                              | 28.0                                                                              | 18.6                                                                              | 46.4                                                                                | 0.0                                                                                 | 22.4                                                                                | 44.4                                                                                | 16.7                                                                                | 16.0                                                                                |
| LnGrp LOS                    | D                                                                                 | C                                                                                 | B                                                                                 | D                                                                                 | C                                                                                 | B                                                                                 | D                                                                                   | A                                                                                   | C                                                                                   | D                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 923                                                                               |                                                                                   |                                                                                   | 1052                                                                              |                                                                                   |                                                                                     | 255                                                                                 |                                                                                     |                                                                                     | 253                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 27.3                                                                              |                                                                                   |                                                                                   | 28.8                                                                              |                                                                                   |                                                                                     | 26.3                                                                                |                                                                                     |                                                                                     | 29.2                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 11.0                                                                              | 30.5                                                                              | 8.2                                                                               | 29.2                                                                              | 7.5                                                                               | 34.1                                                                              | 7.1                                                                                 | 30.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 10.5                                                                              | 25.5                                                                              | 6.5                                                                               | 29.5                                                                              | 6.4                                                                               | 29.6                                                                              | 5.5                                                                                 | 30.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 7.0                                                                               | 9.8                                                                               | 4.6                                                                               | 19.3                                                                              | 3.8                                                                               | 4.8                                                                               | 3.5                                                                                 | 21.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 1.1                                                                               | 0.0                                                                               | 4.2                                                                               | 0.0                                                                               | 0.6                                                                               | 0.0                                                                                 | 4.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 28.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 7: 11th Avenue & Lacey Boulevard

10/31/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 253                                                                               | 268                                                                               | 213                                                                               | 110                                                                               | 304                                                                               | 85                                                                                | 306                                                                                | 632                                                                                 | 57                                                                                  | 92                                                                                  | 552                                                                                 | 105                                                                                 |
| Future Volume (veh/h)        | 253                                                                               | 268                                                                               | 213                                                                               | 110                                                                               | 304                                                                               | 85                                                                                | 306                                                                                | 632                                                                                 | 57                                                                                  | 92                                                                                  | 552                                                                                 | 105                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                 |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                               | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 278                                                                               | 295                                                                               | 234                                                                               | 121                                                                               | 334                                                                               | 93                                                                                | 336                                                                                | 695                                                                                 | 63                                                                                  | 101                                                                                 | 607                                                                                 | 115                                                                                 |
| Peak Hour Factor             | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                               | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                  | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 362                                                                               | 679                                                                               | 303                                                                               | 154                                                                               | 476                                                                               | 131                                                                               | 421                                                                                | 1325                                                                                | 120                                                                                 | 129                                                                                 | 1254                                                                                | 560                                                                                 |
| Arrive On Green              | 0.11                                                                              | 0.19                                                                              | 0.19                                                                              | 0.09                                                                              | 0.17                                                                              | 0.17                                                                              | 0.12                                                                               | 0.41                                                                                | 0.41                                                                                | 0.07                                                                                | 0.36                                                                                | 0.36                                                                                |
| Sat Flow, veh/h              | 3428                                                                              | 3526                                                                              | 1572                                                                              | 1767                                                                              | 2733                                                                              | 750                                                                               | 3428                                                                               | 3269                                                                                | 296                                                                                 | 1767                                                                                | 3526                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 278                                                                               | 295                                                                               | 234                                                                               | 121                                                                               | 214                                                                               | 213                                                                               | 336                                                                                | 375                                                                                 | 383                                                                                 | 101                                                                                 | 607                                                                                 | 115                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1714                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 1721                                                                              | 1714                                                                               | 1763                                                                                | 1802                                                                                | 1767                                                                                | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 5.9                                                                               | 5.5                                                                               | 7.3                                                                               | 5.0                                                                               | 8.5                                                                               | 8.7                                                                               | 7.1                                                                                | 11.9                                                                                | 12.0                                                                                | 4.2                                                                                 | 10.0                                                                                | 3.8                                                                                 |
| Cycle Q Clear(g_c), s        | 5.9                                                                               | 5.5                                                                               | 7.3                                                                               | 5.0                                                                               | 8.5                                                                               | 8.7                                                                               | 7.1                                                                                | 11.9                                                                                | 12.0                                                                                | 4.2                                                                                 | 10.0                                                                                | 3.8                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.44                                                                              | 1.00                                                                               |                                                                                     | 0.16                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 362                                                                               | 679                                                                               | 303                                                                               | 154                                                                               | 307                                                                               | 299                                                                               | 421                                                                                | 715                                                                                 | 731                                                                                 | 129                                                                                 | 1254                                                                                | 560                                                                                 |
| V/C Ratio(X)                 | 0.77                                                                              | 0.43                                                                              | 0.77                                                                              | 0.79                                                                              | 0.70                                                                              | 0.71                                                                              | 0.80                                                                               | 0.52                                                                                | 0.52                                                                                | 0.78                                                                                | 0.48                                                                                | 0.21                                                                                |
| Avail Cap(c_a), veh/h        | 368                                                                               | 1264                                                                              | 564                                                                               | 221                                                                               | 663                                                                               | 647                                                                               | 437                                                                                | 715                                                                                 | 731                                                                                 | 202                                                                                 | 1254                                                                                | 560                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 32.4                                                                              | 26.5                                                                              | 13.9                                                                              | 33.3                                                                              | 28.9                                                                              | 29.0                                                                              | 31.8                                                                               | 16.7                                                                                | 16.7                                                                                | 33.9                                                                                | 18.7                                                                                | 16.7                                                                                |
| Incr Delay (d2), s/veh       | 9.3                                                                               | 0.4                                                                               | 4.2                                                                               | 11.3                                                                              | 2.8                                                                               | 3.1                                                                               | 9.7                                                                                | 2.7                                                                                 | 2.7                                                                                 | 9.8                                                                                 | 1.3                                                                                 | 0.8                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 2.8                                                                               | 2.2                                                                               | 3.9                                                                               | 2.5                                                                               | 3.6                                                                               | 3.7                                                                               | 3.4                                                                                | 4.9                                                                                 | 5.0                                                                                 | 2.1                                                                                 | 4.0                                                                                 | 1.4                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 41.7                                                                              | 26.9                                                                              | 18.1                                                                              | 44.6                                                                              | 31.8                                                                              | 32.1                                                                              | 41.5                                                                               | 19.5                                                                                | 19.4                                                                                | 43.7                                                                                | 20.0                                                                                | 17.5                                                                                |
| LnGrp LOS                    | D                                                                                 | C                                                                                 | B                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                  | B                                                                                   | B                                                                                   | D                                                                                   | C                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 807                                                                               |                                                                                   |                                                                                   | 548                                                                               |                                                                                   |                                                                                   | 1094                                                                               |                                                                                     |                                                                                     | 823                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 29.5                                                                              |                                                                                   |                                                                                   | 34.7                                                                              |                                                                                   |                                                                                   | 26.2                                                                               |                                                                                     |                                                                                     | 22.6                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                  |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 10.0                                                                              | 34.7                                                                              | 11.0                                                                              | 18.9                                                                              | 13.6                                                                              | 31.0                                                                              | 12.4                                                                               | 17.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 8.5                                                                               | 27.5                                                                              | 9.3                                                                               | 26.7                                                                              | 9.5                                                                               | 26.5                                                                              | 8.0                                                                                | 28.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 6.2                                                                               | 14.0                                                                              | 7.0                                                                               | 9.3                                                                               | 9.1                                                                               | 12.0                                                                              | 7.9                                                                                | 10.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 3.9                                                                               | 0.1                                                                               | 2.4                                                                               | 0.1                                                                               | 3.8                                                                               | 0.0                                                                                | 2.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 27.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 8: 11th Avenue & 7th Street

10/31/2020

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 67                                                                                | 176                                                                               | 219                                                                               | 163                                                                               | 162                                                                               | 109                                                                               | 167                                                                                 | 583                                                                                 | 115                                                                                 | 111                                                                                 | 552                                                                                 | 52                                                                                  |
| Future Volume (veh/h)        | 67                                                                                | 176                                                                               | 219                                                                               | 163                                                                               | 162                                                                               | 109                                                                               | 167                                                                                 | 583                                                                                 | 115                                                                                 | 111                                                                                 | 552                                                                                 | 52                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 74                                                                                | 193                                                                               | 241                                                                               | 179                                                                               | 178                                                                               | 120                                                                               | 184                                                                                 | 641                                                                                 | 126                                                                                 | 122                                                                                 | 607                                                                                 | 57                                                                                  |
| Peak Hour Factor             | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 175                                                                               | 348                                                                               | 311                                                                               | 216                                                                               | 554                                                                               | 354                                                                               | 221                                                                                 | 1277                                                                                | 569                                                                                 | 154                                                                                 | 1143                                                                                | 510                                                                                 |
| Arrive On Green              | 0.05                                                                              | 0.20                                                                              | 0.20                                                                              | 0.12                                                                              | 0.27                                                                              | 0.27                                                                              | 0.13                                                                                | 0.36                                                                                | 0.36                                                                                | 0.09                                                                                | 0.32                                                                                | 0.32                                                                                |
| Sat Flow, veh/h              | 3428                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                              | 2063                                                                              | 1318                                                                              | 1767                                                                                | 3526                                                                                | 1572                                                                                | 1767                                                                                | 3526                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 74                                                                                | 193                                                                               | 241                                                                               | 179                                                                               | 151                                                                               | 147                                                                               | 184                                                                                 | 641                                                                                 | 126                                                                                 | 122                                                                                 | 607                                                                                 | 57                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1714                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 1618                                                                              | 1767                                                                                | 1763                                                                                | 1572                                                                                | 1767                                                                                | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 1.6                                                                               | 7.7                                                                               | 11.3                                                                              | 7.7                                                                               | 5.3                                                                               | 5.7                                                                               | 7.9                                                                                 | 11.1                                                                                | 2.7                                                                                 | 5.3                                                                                 | 11.0                                                                                | 2.0                                                                                 |
| Cycle Q Clear(g_c), s        | 1.6                                                                               | 7.7                                                                               | 11.3                                                                              | 7.7                                                                               | 5.3                                                                               | 5.7                                                                               | 7.9                                                                                 | 11.1                                                                                | 2.7                                                                                 | 5.3                                                                                 | 11.0                                                                                | 2.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.81                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 175                                                                               | 348                                                                               | 311                                                                               | 216                                                                               | 474                                                                               | 435                                                                               | 221                                                                                 | 1277                                                                                | 569                                                                                 | 154                                                                                 | 1143                                                                                | 510                                                                                 |
| V/C Ratio(X)                 | 0.42                                                                              | 0.55                                                                              | 0.78                                                                              | 0.83                                                                              | 0.32                                                                              | 0.34                                                                              | 0.83                                                                                | 0.50                                                                                | 0.22                                                                                | 0.79                                                                                | 0.53                                                                                | 0.11                                                                                |
| Avail Cap(c_a), veh/h        | 233                                                                               | 587                                                                               | 524                                                                               | 231                                                                               | 698                                                                               | 641                                                                               | 238                                                                                 | 1277                                                                                | 569                                                                                 | 213                                                                                 | 1143                                                                                | 510                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 35.9                                                                              | 28.2                                                                              | 29.7                                                                              | 33.5                                                                              | 22.8                                                                              | 23.0                                                                              | 33.3                                                                                | 19.4                                                                                | 6.8                                                                                 | 34.9                                                                                | 21.5                                                                                | 18.5                                                                                |
| Incr Delay (d2), s/veh       | 1.6                                                                               | 1.4                                                                               | 4.2                                                                               | 20.5                                                                              | 0.4                                                                               | 0.5                                                                               | 20.4                                                                                | 1.4                                                                                 | 0.9                                                                                 | 12.8                                                                                | 1.8                                                                                 | 0.4                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.7                                                                               | 3.2                                                                               | 4.4                                                                               | 4.5                                                                               | 2.2                                                                               | 2.2                                                                               | 4.5                                                                                 | 4.4                                                                                 | 1.6                                                                                 | 2.7                                                                                 | 4.5                                                                                 | 0.8                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 37.5                                                                              | 29.6                                                                              | 33.8                                                                              | 54.0                                                                              | 23.2                                                                              | 23.4                                                                              | 53.7                                                                                | 20.8                                                                                | 7.7                                                                                 | 47.7                                                                                | 23.3                                                                                | 18.9                                                                                |
| LnGrp LOS                    | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                   | C                                                                                   | A                                                                                   | D                                                                                   | C                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 508                                                                               |                                                                                   |                                                                                   | 477                                                                               |                                                                                   |                                                                                     | 951                                                                                 |                                                                                     |                                                                                     | 786                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 32.8                                                                              |                                                                                   |                                                                                   | 34.8                                                                              |                                                                                   |                                                                                     | 25.4                                                                                |                                                                                     |                                                                                     | 26.8                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 11.3                                                                              | 32.8                                                                              | 14.0                                                                              | 19.9                                                                              | 14.3                                                                              | 29.8                                                                              | 8.5                                                                                 | 25.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 9.4                                                                               | 26.4                                                                              | 10.2                                                                              | 26.0                                                                              | 10.5                                                                              | 25.3                                                                              | 5.3                                                                                 | 30.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 7.3                                                                               | 13.1                                                                              | 9.7                                                                               | 13.3                                                                              | 9.9                                                                               | 13.0                                                                              | 3.6                                                                                 | 7.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 3.9                                                                               | 0.0                                                                               | 2.1                                                                               | 0.0                                                                               | 3.3                                                                               | 0.0                                                                                 | 1.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 28.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# HCM 6th Signalized Intersection Summary

## 10: 11th Avenue & 5th Street

10/31/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |                                                                                   |  |                                                                                   |  |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)       | 138                                                                               | 0                                                                                 | 43                                                                                | 10                                                                                | 0                                                                                 | 10                                                                                | 161                                                                                 | 1071                                                                                | 3                                                                                   | 8                                                                                   | 1013                                                                                | 122                                                                                 |
| Future Volume (veh/h)        | 138                                                                               | 0                                                                                 | 43                                                                                | 10                                                                                | 0                                                                                 | 10                                                                                | 161                                                                                 | 1071                                                                                | 3                                                                                   | 8                                                                                   | 1013                                                                                | 122                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 142                                                                               | 0                                                                                 | 44                                                                                | 10                                                                                | 0                                                                                 | 10                                                                                | 166                                                                                 | 1104                                                                                | 3                                                                                   | 8                                                                                   | 1044                                                                                | 126                                                                                 |
| Peak Hour Factor             | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 290                                                                               | 0                                                                                 | 205                                                                               | 153                                                                               | 24                                                                                | 98                                                                                | 209                                                                                 | 2391                                                                                | 6                                                                                   | 18                                                                                  | 1956                                                                                | 872                                                                                 |
| Arrive On Green              | 0.13                                                                              | 0.00                                                                              | 0.13                                                                              | 0.13                                                                              | 0.00                                                                              | 0.13                                                                              | 0.12                                                                                | 0.66                                                                                | 0.66                                                                                | 0.01                                                                                | 0.55                                                                                | 0.55                                                                                |
| Sat Flow, veh/h              | 1394                                                                              | 0                                                                                 | 1572                                                                              | 572                                                                               | 182                                                                               | 753                                                                               | 1767                                                                                | 3607                                                                                | 10                                                                                  | 1767                                                                                | 3526                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 142                                                                               | 0                                                                                 | 44                                                                                | 20                                                                                | 0                                                                                 | 0                                                                                 | 166                                                                                 | 540                                                                                 | 567                                                                                 | 8                                                                                   | 1044                                                                                | 126                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1394                                                                              | 0                                                                                 | 1572                                                                              | 1507                                                                              | 0                                                                                 | 0                                                                                 | 1767                                                                                | 1763                                                                                | 1854                                                                                | 1767                                                                                | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 5.9                                                                               | 0.0                                                                               | 1.7                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 6.3                                                                                 | 10.2                                                                                | 10.2                                                                                | 0.3                                                                                 | 12.9                                                                                | 2.7                                                                                 |
| Cycle Q Clear(g_c), s        | 6.6                                                                               | 0.0                                                                               | 1.7                                                                               | 0.7                                                                               | 0.0                                                                               | 0.0                                                                               | 6.3                                                                                 | 10.2                                                                                | 10.2                                                                                | 0.3                                                                                 | 12.9                                                                                | 2.7                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 0.50                                                                              |                                                                                   | 0.50                                                                              | 1.00                                                                                |                                                                                     | 0.01                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 290                                                                               | 0                                                                                 | 205                                                                               | 275                                                                               | 0                                                                                 | 0                                                                                 | 209                                                                                 | 1168                                                                                | 1229                                                                                | 18                                                                                  | 1956                                                                                | 872                                                                                 |
| V/C Ratio(X)                 | 0.49                                                                              | 0.00                                                                              | 0.21                                                                              | 0.07                                                                              | 0.00                                                                              | 0.00                                                                              | 0.79                                                                                | 0.46                                                                                | 0.46                                                                                | 0.44                                                                                | 0.53                                                                                | 0.14                                                                                |
| Avail Cap(c_a), veh/h        | 637                                                                               | 0                                                                                 | 596                                                                               | 636                                                                               | 0                                                                                 | 0                                                                                 | 373                                                                                 | 1168                                                                                | 1229                                                                                | 129                                                                                 | 1956                                                                                | 872                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 28.7                                                                              | 0.0                                                                               | 26.7                                                                              | 26.3                                                                              | 0.0                                                                               | 0.0                                                                               | 29.4                                                                                | 5.6                                                                                 | 5.6                                                                                 | 33.8                                                                                | 9.7                                                                                 | 7.4                                                                                 |
| Incr Delay (d2), s/veh       | 1.3                                                                               | 0.0                                                                               | 0.5                                                                               | 0.1                                                                               | 0.0                                                                               | 0.0                                                                               | 6.6                                                                                 | 1.3                                                                                 | 1.3                                                                                 | 15.7                                                                                | 1.0                                                                                 | 0.3                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 2.3                                                                               | 0.0                                                                               | 0.7                                                                               | 0.3                                                                               | 0.0                                                                               | 0.0                                                                               | 2.9                                                                                 | 3.2                                                                                 | 3.3                                                                                 | 0.2                                                                                 | 4.4                                                                                 | 0.9                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 30.0                                                                              | 0.0                                                                               | 27.2                                                                              | 26.4                                                                              | 0.0                                                                               | 0.0                                                                               | 36.1                                                                                | 6.9                                                                                 | 6.9                                                                                 | 49.5                                                                                | 10.7                                                                                | 7.7                                                                                 |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | C                                                                                 | C                                                                                 | A                                                                                 | A                                                                                 | D                                                                                   | A                                                                                   | A                                                                                   | D                                                                                   | B                                                                                   | A                                                                                   |
| Approach Vol, veh/h          | 186                                                                               |                                                                                   |                                                                                   | 20                                                                                |                                                                                   |                                                                                   | 1273                                                                                |                                                                                     |                                                                                     | 1178                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 29.4                                                                              |                                                                                   |                                                                                   | 26.4                                                                              |                                                                                   |                                                                                   | 10.7                                                                                |                                                                                     |                                                                                     | 10.7                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 4                                                                                 |                                                                                   | 5                                                                                 | 6                                                                                 | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 5.2                                                                               | 50.0                                                                              | 13.4                                                                              |                                                                                   | 12.6                                                                              | 42.6                                                                              | 13.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 5.0                                                                               | 45.5                                                                              | 26.0                                                                              |                                                                                   | 14.5                                                                              | 36.0                                                                              | 26.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 2.3                                                                               | 12.2                                                                              | 8.6                                                                               |                                                                                   | 8.3                                                                               | 14.9                                                                              | 2.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 9.0                                                                               | 0.6                                                                               |                                                                                   | 0.2                                                                               | 8.4                                                                               | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 12.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 11: 11th Avenue & SR 198 WB On Ramp/4th Street

10/31/2020

|                              |  |      |     |      |      |      |      |      |      |      |      |      |
|------------------------------|------------------------------------------------------------------------------------|------|-----|------|------|------|------|------|------|------|------|------|
| Movement                     | EBL                                                                                | EBT  | EBR | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations          |                                                                                    |      |     | ↰    | ↱    | ↰    | ↰    | ↱    |      |      | ↱    | ↰    |
| Traffic Volume (veh/h)       | 0                                                                                  | 0    | 0   | 218  | 35   | 196  | 91   | 1032 | 0    | 0    | 874  | 277  |
| Future Volume (veh/h)        | 0                                                                                  | 0    | 0   | 218  | 35   | 196  | 91   | 1032 | 0    | 0    | 874  | 277  |
| Initial Q (Qb), veh          |                                                                                    |      |     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Ped-Bike Adj(A_pbT)          |                                                                                    |      |     | 1.00 |      | 1.00 | 1.00 |      | 1.00 | 1.00 |      | 1.00 |
| Parking Bus, Adj             |                                                                                    |      |     | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach        |                                                                                    |      |     | No   |      |      | No   |      |      |      | No   |      |
| Adj Sat Flow, veh/h/ln       |                                                                                    |      |     | 1856 | 1856 | 1856 | 1856 | 1856 | 0    | 0    | 1856 | 1856 |
| Adj Flow Rate, veh/h         |                                                                                    |      |     | 229  | 37   | 206  | 96   | 1086 | 0    | 0    | 920  | 292  |
| Peak Hour Factor             |                                                                                    |      |     | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Percent Heavy Veh, %         |                                                                                    |      |     | 3    | 3    | 3    | 3    | 3    | 0    | 0    | 3    | 3    |
| Cap, veh/h                   |                                                                                    |      |     | 305  | 320  | 271  | 124  | 2476 | 0    | 0    | 2008 | 896  |
| Arrive On Green              |                                                                                    |      |     | 0.17 | 0.17 | 0.17 | 0.07 | 0.70 | 0.00 | 0.00 | 0.57 | 0.57 |
| Sat Flow, veh/h              |                                                                                    |      |     | 1767 | 1856 | 1572 | 1767 | 3618 | 0    | 0    | 3618 | 1572 |
| Grp Volume(v), veh/h         |                                                                                    |      |     | 229  | 37   | 206  | 96   | 1086 | 0    | 0    | 920  | 292  |
| Grp Sat Flow(s),veh/h/ln     |                                                                                    |      |     | 1767 | 1856 | 1572 | 1767 | 1763 | 0    | 0    | 1763 | 1572 |
| Q Serve(g_s), s              |                                                                                    |      |     | 8.9  | 1.2  | 9.0  | 3.8  | 9.5  | 0.0  | 0.0  | 10.9 | 7.1  |
| Cycle Q Clear(g_c), s        |                                                                                    |      |     | 8.9  | 1.2  | 9.0  | 3.8  | 9.5  | 0.0  | 0.0  | 10.9 | 7.1  |
| Prop In Lane                 |                                                                                    |      |     | 1.00 |      | 1.00 | 1.00 |      | 0.00 | 0.00 |      | 1.00 |
| Lane Grp Cap(c), veh/h       |                                                                                    |      |     | 305  | 320  | 271  | 124  | 2476 | 0    | 0    | 2008 | 896  |
| V/C Ratio(X)                 |                                                                                    |      |     | 0.75 | 0.12 | 0.76 | 0.77 | 0.44 | 0.00 | 0.00 | 0.46 | 0.33 |
| Avail Cap(c_a), veh/h        |                                                                                    |      |     | 750  | 787  | 667  | 261  | 2476 | 0    | 0    | 2008 | 896  |
| HCM Platoon Ratio            |                                                                                    |      |     | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I)           |                                                                                    |      |     | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh     |                                                                                    |      |     | 28.3 | 25.1 | 28.3 | 32.9 | 4.6  | 0.0  | 0.0  | 9.0  | 8.2  |
| Incr Delay (d2), s/veh       |                                                                                    |      |     | 3.7  | 0.2  | 4.4  | 9.8  | 0.6  | 0.0  | 0.0  | 0.8  | 1.0  |
| Initial Q Delay(d3),s/veh    |                                                                                    |      |     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile BackOfQ(50%),veh/ln     |                                                                                    |      |     | 3.7  | 0.5  | 3.4  | 1.9  | 2.6  | 0.0  | 0.0  | 3.6  | 2.2  |
| Unsig. Movement Delay, s/veh |                                                                                    |      |     |      |      |      |      |      |      |      |      |      |
| LnGrp Delay(d),s/veh         |                                                                                    |      |     | 32.0 | 25.3 | 32.7 | 42.7 | 5.2  | 0.0  | 0.0  | 9.8  | 9.1  |
| LnGrp LOS                    |                                                                                    |      |     | C    | C    | C    | D    | A    | A    | A    | A    | A    |
| Approach Vol, veh/h          |                                                                                    |      |     |      | 472  |      |      | 1182 |      |      | 1212 |      |
| Approach Delay, s/veh        |                                                                                    |      |     |      | 31.8 |      |      | 8.2  |      |      | 9.6  |      |
| Approach LOS                 |                                                                                    |      |     |      | C    |      |      | A    |      |      | A    |      |
| Timer - Assigned Phs         |                                                                                    | 2    |     |      | 5    | 6    |      | 8    |      |      |      |      |
| Phs Duration (G+Y+Rc), s     |                                                                                    | 55.0 |     |      | 9.5  | 45.5 |      | 16.9 |      |      |      |      |
| Change Period (Y+Rc), s      |                                                                                    | 4.5  |     |      | 4.5  | 4.5  |      | 4.5  |      |      |      |      |
| Max Green Setting (Gmax), s  |                                                                                    | 50.5 |     |      | 10.6 | 35.4 |      | 30.5 |      |      |      |      |
| Max Q Clear Time (g_c+I1), s |                                                                                    | 11.5 |     |      | 5.8  | 12.9 |      | 11.0 |      |      |      |      |
| Green Ext Time (p_c), s      |                                                                                    | 10.2 |     |      | 0.1  | 7.9  |      | 1.4  |      |      |      |      |
| <b>Intersection Summary</b>  |                                                                                    |      |     |      |      |      |      |      |      |      |      |      |
| HCM 6th Ctrl Delay           |                                                                                    |      |     | 12.7 |      |      |      |      |      |      |      |      |
| HCM 6th LOS                  |                                                                                    |      |     | B    |      |      |      |      |      |      |      |      |

# HCM 6th Signalized Intersection Summary 12: 11th Avenue & SR 198 EB Off Ramp/3rd Street

10/31/2020

|                              |  |      |      |      |     |      |      |      |      |      |      |      |
|------------------------------|------------------------------------------------------------------------------------|------|------|------|-----|------|------|------|------|------|------|------|
| Movement                     | EBL                                                                                | EBT  | EBR  | WBL  | WBT | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations          |                                                                                    | ↩    | ↪    |      |     |      |      | ↩↪   | ↪    | ↩    | ↩↪   |      |
| Traffic Volume (veh/h)       | 369                                                                                | 79   | 75   | 0    | 0   | 0    | 0    | 755  | 203  | 282  | 815  | 0    |
| Future Volume (veh/h)        | 369                                                                                | 79   | 75   | 0    | 0   | 0    | 0    | 755  | 203  | 282  | 815  | 0    |
| Initial Q (Qb), veh          | 0                                                                                  | 0    | 0    |      |     |      | 0    | 0    | 0    | 0    | 0    | 0    |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                               |      | 1.00 |      |     |      | 1.00 |      | 1.00 | 1.00 |      | 1.00 |
| Parking Bus, Adj             | 1.00                                                                               | 1.00 | 1.00 |      |     |      | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach        |                                                                                    | No   |      |      |     |      |      | No   |      |      | No   |      |
| Adj Sat Flow, veh/h/ln       | 1856                                                                               | 1856 | 1856 |      |     |      | 0    | 1856 | 1856 | 1856 | 1856 | 0    |
| Adj Flow Rate, veh/h         | 384                                                                                | 82   | 78   |      |     |      | 0    | 786  | 211  | 294  | 849  | 0    |
| Peak Hour Factor             | 0.96                                                                               | 0.96 | 0.96 |      |     |      | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Percent Heavy Veh, %         | 3                                                                                  | 3    | 3    |      |     |      | 0    | 3    | 3    | 3    | 3    | 0    |
| Cap, veh/h                   | 432                                                                                | 92   | 463  |      |     |      | 0    | 1253 | 559  | 336  | 2111 | 0    |
| Arrive On Green              | 0.29                                                                               | 0.29 | 0.29 |      |     |      | 0.00 | 0.36 | 0.36 | 0.19 | 0.60 | 0.00 |
| Sat Flow, veh/h              | 1469                                                                               | 314  | 1572 |      |     |      | 0    | 3618 | 1572 | 1767 | 3618 | 0    |
| Grp Volume(v), veh/h         | 466                                                                                | 0    | 78   |      |     |      | 0    | 786  | 211  | 294  | 849  | 0    |
| Grp Sat Flow(s),veh/h/ln     | 1782                                                                               | 0    | 1572 |      |     |      | 0    | 1763 | 1572 | 1767 | 1763 | 0    |
| Q Serve(g_s), s              | 21.1                                                                               | 0.0  | 3.1  |      |     |      | 0.0  | 15.6 | 8.4  | 13.6 | 10.7 | 0.0  |
| Cycle Q Clear(g_c), s        | 21.1                                                                               | 0.0  | 3.1  |      |     |      | 0.0  | 15.6 | 8.4  | 13.6 | 10.7 | 0.0  |
| Prop In Lane                 | 0.82                                                                               |      | 1.00 |      |     |      | 0.00 |      | 1.00 | 1.00 |      | 0.00 |
| Lane Grp Cap(c), veh/h       | 525                                                                                | 0    | 463  |      |     |      | 0    | 1253 | 559  | 336  | 2111 | 0    |
| V/C Ratio(X)                 | 0.89                                                                               | 0.00 | 0.17 |      |     |      | 0.00 | 0.63 | 0.38 | 0.88 | 0.40 | 0.00 |
| Avail Cap(c_a), veh/h        | 644                                                                                | 0    | 569  |      |     |      | 0    | 1253 | 559  | 430  | 2111 | 0    |
| HCM Platoon Ratio            | 1.00                                                                               | 1.00 | 1.00 |      |     |      | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I)           | 1.00                                                                               | 0.00 | 1.00 |      |     |      | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 |
| Uniform Delay (d), s/veh     | 28.4                                                                               | 0.0  | 22.1 |      |     |      | 0.0  | 22.5 | 20.2 | 33.2 | 8.9  | 0.0  |
| Incr Delay (d2), s/veh       | 12.3                                                                               | 0.0  | 0.2  |      |     |      | 0.0  | 2.4  | 1.9  | 15.1 | 0.6  | 0.0  |
| Initial Q Delay(d3),s/veh    | 0.0                                                                                | 0.0  | 0.0  |      |     |      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile BackOfQ(50%),veh/ln     | 10.0                                                                               | 0.0  | 1.1  |      |     |      | 0.0  | 6.4  | 3.2  | 7.1  | 3.8  | 0.0  |
| Unsig. Movement Delay, s/veh |                                                                                    |      |      |      |     |      |      |      |      |      |      |      |
| LnGrp Delay(d),s/veh         | 40.8                                                                               | 0.0  | 22.3 |      |     |      | 0.0  | 24.9 | 22.2 | 48.3 | 9.5  | 0.0  |
| LnGrp LOS                    | D                                                                                  | A    | C    |      |     |      | A    | C    | C    | D    | A    | A    |
| Approach Vol, veh/h          |                                                                                    | 544  |      |      |     |      |      | 997  |      |      | 1143 |      |
| Approach Delay, s/veh        |                                                                                    | 38.1 |      |      |     |      |      | 24.3 |      |      | 19.5 |      |
| Approach LOS                 |                                                                                    | D    |      |      |     |      |      | C    |      |      | B    |      |
| Timer - Assigned Phs         | 1                                                                                  | 2    |      | 4    |     | 6    |      |      |      |      |      |      |
| Phs Duration (G+Y+Rc), s     | 20.5                                                                               | 34.5 |      | 29.3 |     | 55.0 |      |      |      |      |      |      |
| Change Period (Y+Rc), s      | 4.5                                                                                | 4.5  |      | 4.5  |     | 4.5  |      |      |      |      |      |      |
| Max Green Setting (Gmax), s  | 20.5                                                                               | 25.5 |      | 30.5 |     | 50.5 |      |      |      |      |      |      |
| Max Q Clear Time (g_c+I1), s | 15.6                                                                               | 17.6 |      | 23.1 |     | 12.7 |      |      |      |      |      |      |
| Green Ext Time (p_c), s      | 0.4                                                                                | 3.5  |      | 1.8  |     | 7.2  |      |      |      |      |      |      |
| <b>Intersection Summary</b>  |                                                                                    |      |      |      |     |      |      |      |      |      |      |      |
| HCM 6th Ctrl Delay           |                                                                                    |      | 25.1 |      |     |      |      |      |      |      |      |      |
| HCM 6th LOS                  |                                                                                    |      | C    |      |     |      |      |      |      |      |      |      |

HCM 6th AWSC  
5: Campus Dr/Campus Drive & 7th Street

10/31/2020

| Intersection              |      |
|---------------------------|------|
| Intersection Delay, s/veh | 15.6 |
| Intersection LOS          | C    |

| Movement            | EBL                                                                               | EBT                                                                               | EBR  | WBL                                                                               | WBT                                                                               | WBR  | NBL  | NBT                                                                                 | NBR  | SBL  | SBT                                                                                 | SBR  |
|---------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|
| Lane Configurations |  |  |      |  |  |      |      |  |      |      |  |      |
| Traffic Vol, veh/h  | 70                                                                                | 265                                                                               | 26   | 9                                                                                 | 337                                                                               | 40   | 38   | 47                                                                                  | 4    | 88   | 29                                                                                  | 87   |
| Future Vol, veh/h   | 70                                                                                | 265                                                                               | 26   | 9                                                                                 | 337                                                                               | 40   | 38   | 47                                                                                  | 4    | 88   | 29                                                                                  | 87   |
| Peak Hour Factor    | 0.96                                                                              | 0.96                                                                              | 0.96 | 0.96                                                                              | 0.96                                                                              | 0.96 | 0.96 | 0.96                                                                                | 0.96 | 0.96 | 0.96                                                                                | 0.96 |
| Heavy Vehicles, %   | 3                                                                                 | 3                                                                                 | 3    | 3                                                                                 | 3                                                                                 | 3    | 3    | 3                                                                                   | 3    | 3    | 3                                                                                   | 3    |
| Mvmt Flow           | 73                                                                                | 276                                                                               | 27   | 9                                                                                 | 351                                                                               | 42   | 40   | 49                                                                                  | 4    | 92   | 30                                                                                  | 91   |
| Number of Lanes     | 1                                                                                 | 1                                                                                 | 0    | 1                                                                                 | 1                                                                                 | 0    | 0    | 1                                                                                   | 0    | 0    | 1                                                                                   | 0    |

| Approach                   | EB   | WB   | NB   | SB   |
|----------------------------|------|------|------|------|
| Opposing Approach          | WB   | EB   | SB   | NB   |
| Opposing Lanes             | 2    | 2    | 1    | 1    |
| Conflicting Approach Left  | SB   | NB   | EB   | WB   |
| Conflicting Lanes Left     | 1    | 1    | 2    | 2    |
| Conflicting Approach Right | NB   | SB   | WB   | EB   |
| Conflicting Lanes Right    | 1    | 1    | 2    | 2    |
| HCM Control Delay          | 14.2 | 19.4 | 11.2 | 12.7 |
| HCM LOS                    | B    | C    | B    | B    |

| Lane                   | NBLn1 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | SBLn1 |
|------------------------|-------|-------|-------|-------|-------|-------|
| Vol Left, %            | 43%   | 100%  | 0%    | 100%  | 0%    | 43%   |
| Vol Thru, %            | 53%   | 0%    | 91%   | 0%    | 89%   | 14%   |
| Vol Right, %           | 4%    | 0%    | 9%    | 0%    | 11%   | 43%   |
| Sign Control           | Stop  | Stop  | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 89    | 70    | 291   | 9     | 377   | 204   |
| LT Vol                 | 38    | 70    | 0     | 9     | 0     | 88    |
| Through Vol            | 47    | 0     | 265   | 0     | 337   | 29    |
| RT Vol                 | 4     | 0     | 26    | 0     | 40    | 87    |
| Lane Flow Rate         | 93    | 73    | 303   | 9     | 393   | 212   |
| Geometry Grp           | 2     | 7     | 7     | 7     | 7     | 2     |
| Degree of Util (X)     | 0.175 | 0.134 | 0.511 | 0.017 | 0.656 | 0.362 |
| Departure Headway (Hd) | 6.785 | 6.638 | 6.065 | 6.601 | 6.018 | 6.134 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 532   | 537   | 591   | 540   | 597   | 582   |
| Service Time           | 4.785 | 4.413 | 3.84  | 4.373 | 3.789 | 4.222 |
| HCM Lane V/C Ratio     | 0.175 | 0.136 | 0.513 | 0.017 | 0.658 | 0.364 |
| HCM Control Delay      | 11.2  | 10.4  | 15.1  | 9.5   | 19.6  | 12.7  |
| HCM Lane LOS           | B     | B     | C     | A     | C     | B     |
| HCM 95th-tile Q        | 0.6   | 0.5   | 2.9   | 0.1   | 4.8   | 1.6   |

# EXISTING PLUS PROJECT WORKSHEETS

HCM 6th TWSC  
1: 12th Avenue & Glendale Avenue

10/31/2020

| Intersection             |      |      |                                                                                   |      |      |                                                                                   |      |                                                                                   |      |                                                                                     |                                                                                     |      |
|--------------------------|------|------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 2.1  |      |                                                                                   |      |      |                                                                                   |      |                                                                                   |      |                                                                                     |                                                                                     |      |
| Movement                 | EBL  | EBT  | EBR                                                                               | WBL  | WBT  | WBR                                                                               | NBL  | NBT                                                                               | NBR  | SBL                                                                                 | SBT                                                                                 | SBR  |
| Lane Configurations      |      |      |  |      |      |  |      |  |      |  |  |      |
| Traffic Vol, veh/h       | 0    | 0    | 72                                                                                | 0    | 0    | 95                                                                                | 0    | 1183                                                                              | 165  | 63                                                                                  | 780                                                                                 | 100  |
| Future Vol, veh/h        | 0    | 0    | 72                                                                                | 0    | 0    | 95                                                                                | 0    | 1183                                                                              | 165  | 63                                                                                  | 780                                                                                 | 100  |
| Conflicting Peds, #/hr   | 0    | 0    | 0                                                                                 | 0    | 0    | 0                                                                                 | 0    | 0                                                                                 | 0    | 0                                                                                   | 0                                                                                   | 0    |
| Sign Control             | Stop | Stop | Stop                                                                              | Stop | Stop | Stop                                                                              | Free | Free                                                                              | Free | Free                                                                                | Free                                                                                | Free |
| RT Channelized           | -    | -    | None                                                                              | -    | -    | None                                                                              | -    | -                                                                                 | None | -                                                                                   | -                                                                                   | None |
| Storage Length           | -    | -    | 0                                                                                 | -    | -    | 0                                                                                 | -    | -                                                                                 | -    | 125                                                                                 | -                                                                                   | -    |
| Veh in Median Storage, # | -    | 0    | -                                                                                 | -    | 0    | -                                                                                 | -    | 0                                                                                 | -    | -                                                                                   | 0                                                                                   | -    |
| Grade, %                 | -    | 0    | -                                                                                 | -    | 0    | -                                                                                 | -    | 0                                                                                 | -    | -                                                                                   | 0                                                                                   | -    |
| Peak Hour Factor         | 88   | 88   | 88                                                                                | 88   | 88   | 88                                                                                | 88   | 88                                                                                | 88   | 88                                                                                  | 88                                                                                  | 88   |
| Heavy Vehicles, %        | 3    | 3    | 3                                                                                 | 3    | 3    | 3                                                                                 | 3    | 3                                                                                 | 3    | 3                                                                                   | 3                                                                                   | 3    |
| Mvmt Flow                | 0    | 0    | 82                                                                                | 0    | 0    | 108                                                                               | 0    | 1344                                                                              | 188  | 72                                                                                  | 886                                                                                 | 114  |

| Major/Minor          | Minor2 |   | Minor1 |   | Major1 |      | Major2 |      |
|----------------------|--------|---|--------|---|--------|------|--------|------|
| Conflicting Flow All | -      | - | 500    | - | -      | 766  | -      | 0    |
| Stage 1              | -      | - | -      | - | -      | -    | -      | -    |
| Stage 2              | -      | - | -      | - | -      | -    | -      | -    |
| Critical Hdwy        | -      | - | 7.16   | - | -      | 7.16 | -      | 5.36 |
| Critical Hdwy Stg 1  | -      | - | -      | - | -      | -    | -      | -    |
| Critical Hdwy Stg 2  | -      | - | -      | - | -      | -    | -      | -    |
| Follow-up Hdwy       | -      | - | 3.93   | - | -      | 3.93 | -      | 3.13 |
| Pot Cap-1 Maneuver   | 0      | 0 | 440    | 0 | 0      | 295  | 0      | 213  |
| Stage 1              | 0      | 0 | -      | 0 | 0      | -    | -      | -    |
| Stage 2              | 0      | 0 | -      | 0 | 0      | -    | -      | -    |
| Platoon blocked, %   | -      | - | -      | - | -      | -    | -      | -    |
| Mov Cap-1 Maneuver   | -      | - | 440    | - | -      | 295  | -      | 213  |
| Mov Cap-2 Maneuver   | -      | - | -      | - | -      | -    | -      | -    |
| Stage 1              | -      | - | -      | - | -      | -    | -      | -    |
| Stage 2              | -      | - | -      | - | -      | -    | -      | -    |

| Approach             | EB | WB   | NB | SB |
|----------------------|----|------|----|----|
| HCM Control Delay, s | 15 | 24.1 | 0  | 2  |
| HCM LOS              | C  | C    |    |    |

| Minor Lane/Major Mvmt | NBT | NBR | EBLn1WBLn1 | SBL   | SBT   | SBR |
|-----------------------|-----|-----|------------|-------|-------|-----|
| Capacity (veh/h)      | -   | -   | 440        | 295   | 213   | -   |
| HCM Lane V/C Ratio    | -   | -   | 0.186      | 0.366 | 0.336 | -   |
| HCM Control Delay (s) | -   | -   | 15         | 24.1  | 30.2  | -   |
| HCM Lane LOS          | -   | -   | C          | C     | D     | -   |
| HCM 95th %tile Q(veh) | -   | -   | 0.7        | 1.6   | 1.4   | -   |

HCM 6th TWSC  
6: Campus Dr & 6th Street

10/31/2020

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 3.8  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      | ↔    |      |      | ↔    |      |      | ↔    |      |      | ↔    |      |
| Traffic Vol, veh/h       | 16   | 13   | 1    | 0    | 10   | 73   | 1    | 57   | 1    | 30   | 145  | 25   |
| Future Vol, veh/h        | 16   | 13   | 1    | 0    | 10   | 73   | 1    | 57   | 1    | 30   | 145  | 25   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 70   | 70   | 70   | 70   | 70   | 70   | 70   | 70   | 70   | 70   | 70   | 70   |
| Heavy Vehicles, %        | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    |
| Mvmt Flow                | 23   | 19   | 1    | 0    | 14   | 104  | 1    | 81   | 1    | 43   | 207  | 36   |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       | Major2 |   |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|--------|---|---|-------|---|---|
| Conflicting Flow All | 454    | 395   | 225    | 405   | 413    | 82    | 243    | 0 | 0 | 82    | 0 | 0 |
| Stage 1              | 311    | 311   | -      | 84    | 84     | -     | -      | - | - | -     | - | - |
| Stage 2              | 143    | 84    | -      | 321   | 329    | -     | -      | - | - | -     | - | - |
| Critical Hdwy        | 7.13   | 6.53  | 6.23   | 7.13  | 6.53   | 6.23  | 4.13   | - | - | 4.13  | - | - |
| Critical Hdwy Stg 1  | 6.13   | 5.53  | -      | 6.13  | 5.53   | -     | -      | - | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.13   | 5.53  | -      | 6.13  | 5.53   | -     | -      | - | - | -     | - | - |
| Follow-up Hdwy       | 3.527  | 4.027 | 3.327  | 3.527 | 4.027  | 3.327 | 2.227  | - | - | 2.227 | - | - |
| Pot Cap-1 Maneuver   | 515    | 540   | 812    | 554   | 528    | 975   | 1317   | - | - | 1509  | - | - |
| Stage 1              | 697    | 656   | -      | 922   | 823    | -     | -      | - | - | -     | - | - |
| Stage 2              | 857    | 823   | -      | 689   | 645    | -     | -      | - | - | -     | - | - |
| Platoon blocked, %   |        |       |        |       |        |       |        | - | - | -     | - | - |
| Mov Cap-1 Maneuver   | 438    | 522   | 812    | 524   | 510    | 975   | 1317   | - | - | 1509  | - | - |
| Mov Cap-2 Maneuver   | 438    | 522   | -      | 524   | 510    | -     | -      | - | - | -     | - | - |
| Stage 1              | 696    | 634   | -      | 921   | 822    | -     | -      | - | - | -     | - | - |
| Stage 2              | 751    | 822   | -      | 646   | 624    | -     | -      | - | - | -     | - | - |

| Approach             | EB   |  | WB  |  | NB  |  | SB  |  |
|----------------------|------|--|-----|--|-----|--|-----|--|
| HCM Control Delay, s | 13.3 |  | 9.7 |  | 0.1 |  | 1.1 |  |
| HCM LOS              | B    |  | A   |  |     |  |     |  |

| Minor Lane/Major Mvmt | NBL   | NBT | NBR | EBLn1WBLn1 | SBL   | SBT   | SBR |
|-----------------------|-------|-----|-----|------------|-------|-------|-----|
| Capacity (veh/h)      | 1317  | -   | -   | 479        | 878   | 1509  | -   |
| HCM Lane V/C Ratio    | 0.001 | -   | -   | 0.089      | 0.135 | 0.028 | -   |
| HCM Control Delay (s) | 7.7   | 0   | -   | 13.3       | 9.7   | 7.5   | 0   |
| HCM Lane LOS          | A     | A   | -   | B          | A     | A     | A   |
| HCM 95th %tile Q(veh) | 0     | -   | -   | 0.3        | 0.5   | 0.1   | -   |



| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.8  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      |      | ↗    |      |      | ↗    | ↗    | ↗    |      | ↗    | ↗    |      |
| Traffic Vol, veh/h       | 0    | 0    | 52   | 0    | 0    | 52   | 99   | 779  | 64   | 74   | 545  | 14   |
| Future Vol, veh/h        | 0    | 0    | 52   | 0    | 0    | 52   | 99   | 779  | 64   | 74   | 545  | 14   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | 0    | -    | -    | 0    | 75   | -    | -    | 125  | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 87   | 87   | 87   | 87   | 87   | 87   | 87   | 87   | 87   | 87   | 87   | 87   |
| Heavy Vehicles, %        | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    |
| Mvmt Flow                | 0    | 0    | 60   | 0    | 0    | 60   | 114  | 895  | 74   | 85   | 626  | 16   |

| Major/Minor          | Minor2 |   | Minor1 |   | Major1 |      | Major2 |   |   |      |   |   |
|----------------------|--------|---|--------|---|--------|------|--------|---|---|------|---|---|
| Conflicting Flow All | -      | - | 321    | - | -      | 485  | 642    | 0 | 0 | 969  | 0 | 0 |
| Stage 1              | -      | - | -      | - | -      | -    | -      | - | - | -    | - | - |
| Stage 2              | -      | - | -      | - | -      | -    | -      | - | - | -    | - | - |
| Critical Hdwy        | -      | - | 6.96   | - | -      | 6.96 | 4.16   | - | - | 4.16 | - | - |
| Critical Hdwy Stg 1  | -      | - | -      | - | -      | -    | -      | - | - | -    | - | - |
| Critical Hdwy Stg 2  | -      | - | -      | - | -      | -    | -      | - | - | -    | - | - |
| Follow-up Hdwy       | -      | - | 3.33   | - | -      | 3.33 | 2.23   | - | - | 2.23 | - | - |
| Pot Cap-1 Maneuver   | 0      | 0 | 672    | 0 | 0      | 525  | 932    | - | - | 701  | - | - |
| Stage 1              | 0      | 0 | -      | 0 | 0      | -    | -      | - | - | -    | - | - |
| Stage 2              | 0      | 0 | -      | 0 | 0      | -    | -      | - | - | -    | - | - |
| Platoon blocked, %   | -      | - | -      | - | -      | -    | -      | - | - | -    | - | - |
| Mov Cap-1 Maneuver   | -      | - | 672    | - | -      | 525  | 932    | - | - | 701  | - | - |
| Mov Cap-2 Maneuver   | -      | - | -      | - | -      | -    | -      | - | - | -    | - | - |
| Stage 1              | -      | - | -      | - | -      | -    | -      | - | - | -    | - | - |
| Stage 2              | -      | - | -      | - | -      | -    | -      | - | - | -    | - | - |

| Approach             | EB   |  | WB   |  | NB |  | SB  |  |
|----------------------|------|--|------|--|----|--|-----|--|
| HCM Control Delay, s | 10.9 |  | 12.7 |  | 1  |  | 1.3 |  |
| HCM LOS              | B    |  | B    |  |    |  |     |  |

| Minor Lane/Major Mvmt | NBL   | NBT | NBR | EBLn1WBLn1 | SBL   | SBT   | SBR |
|-----------------------|-------|-----|-----|------------|-------|-------|-----|
| Capacity (veh/h)      | 932   | -   | -   | 672        | 525   | 701   | -   |
| HCM Lane V/C Ratio    | 0.122 | -   | -   | 0.089      | 0.114 | 0.121 | -   |
| HCM Control Delay (s) | 9.4   | -   | -   | 10.9       | 12.7  | 10.8  | -   |
| HCM Lane LOS          | A     | -   | -   | B          | B     | B     | -   |
| HCM 95th %tile Q(veh) | 0.4   | -   | -   | 0.3        | 0.4   | 0.4   | -   |

# HCM 6th Signalized Intersection Summary

## 2: SR 198 WB Ramps & 12th Avenue

10/31/2020

|                              |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | WBL                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                                 | SBR                                                                                 | NEL                                                                                 | NER                                                                                 |
| Lane Configurations          |  |  |  |  |                                                                                   |                                                                                   |  |  |                                                                                     |                                                                                     |
| Traffic Volume (veh/h)       | 46                                                                                | 488                                                                               | 51                                                                                | 864                                                                               | 0                                                                                 | 0                                                                                 | 535                                                                                 | 313                                                                                 | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 46                                                                                | 488                                                                               | 51                                                                                | 864                                                                               | 0                                                                                 | 0                                                                                 | 535                                                                                 | 313                                                                                 | 0                                                                                   | 0                                                                                   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 0                                                                                 | 0                                                                                 | 1856                                                                                | 1856                                                                                |                                                                                     |                                                                                     |
| Adj Flow Rate, veh/h         | 51                                                                                | 542                                                                               | 57                                                                                | 960                                                                               | 0                                                                                 | 0                                                                                 | 594                                                                                 | 348                                                                                 |                                                                                     |                                                                                     |
| Peak Hour Factor             | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                                | 0.90                                                                                |                                                                                     |                                                                                     |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 3                                                                                   | 3                                                                                   |                                                                                     |                                                                                     |
| Cap, veh/h                   | 388                                                                               | 690                                                                               | 83                                                                                | 2321                                                                              | 0                                                                                 | 0                                                                                 | 1941                                                                                | 866                                                                                 |                                                                                     |                                                                                     |
| Arrive On Green              | 0.22                                                                              | 0.22                                                                              | 0.05                                                                              | 0.66                                                                              | 0.00                                                                              | 0.00                                                                              | 0.55                                                                                | 0.55                                                                                |                                                                                     |                                                                                     |
| Sat Flow, veh/h              | 1767                                                                              | 3145                                                                              | 1767                                                                              | 3618                                                                              | 0                                                                                 | 0                                                                                 | 3618                                                                                | 1572                                                                                |                                                                                     |                                                                                     |
| Grp Volume(v), veh/h         | 51                                                                                | 542                                                                               | 57                                                                                | 960                                                                               | 0                                                                                 | 0                                                                                 | 594                                                                                 | 348                                                                                 |                                                                                     |                                                                                     |
| Grp Sat Flow(s),veh/h/ln     | 1767                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 0                                                                                 | 0                                                                                 | 1763                                                                                | 1572                                                                                |                                                                                     |                                                                                     |
| Q Serve(g_s), s              | 1.7                                                                               | 12.0                                                                              | 2.3                                                                               | 9.4                                                                               | 0.0                                                                               | 0.0                                                                               | 6.7                                                                                 | 9.4                                                                                 |                                                                                     |                                                                                     |
| Cycle Q Clear(g_c), s        | 1.7                                                                               | 12.0                                                                              | 2.3                                                                               | 9.4                                                                               | 0.0                                                                               | 0.0                                                                               | 6.7                                                                                 | 9.4                                                                                 |                                                                                     |                                                                                     |
| Prop In Lane                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 0.00                                                                              |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |
| Lane Grp Cap(c), veh/h       | 388                                                                               | 690                                                                               | 83                                                                                | 2321                                                                              | 0                                                                                 | 0                                                                                 | 1941                                                                                | 866                                                                                 |                                                                                     |                                                                                     |
| V/C Ratio(X)                 | 0.13                                                                              | 0.79                                                                              | 0.69                                                                              | 0.41                                                                              | 0.00                                                                              | 0.00                                                                              | 0.31                                                                                | 0.40                                                                                |                                                                                     |                                                                                     |
| Avail Cap(c_a), veh/h        | 780                                                                               | 1387                                                                              | 228                                                                               | 2321                                                                              | 0                                                                                 | 0                                                                                 | 1941                                                                                | 866                                                                                 |                                                                                     |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Uniform Delay (d), s/veh     | 23.1                                                                              | 27.1                                                                              | 34.6                                                                              | 5.9                                                                               | 0.0                                                                               | 0.0                                                                               | 9.0                                                                                 | 9.6                                                                                 |                                                                                     |                                                                                     |
| Incr Delay (d2), s/veh       | 0.2                                                                               | 2.0                                                                               | 9.8                                                                               | 0.5                                                                               | 0.0                                                                               | 0.0                                                                               | 0.4                                                                                 | 1.4                                                                                 |                                                                                     |                                                                                     |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |
| %ile BackOfQ(50%),veh/ln     | 0.7                                                                               | 4.3                                                                               | 1.2                                                                               | 2.6                                                                               | 0.0                                                                               | 0.0                                                                               | 2.2                                                                                 | 3.0                                                                                 |                                                                                     |                                                                                     |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 23.3                                                                              | 29.1                                                                              | 44.4                                                                              | 6.5                                                                               | 0.0                                                                               | 0.0                                                                               | 9.4                                                                                 | 10.9                                                                                |                                                                                     |                                                                                     |
| LnGrp LOS                    | C                                                                                 | C                                                                                 | D                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                   | B                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          | 593                                                                               |                                                                                   |                                                                                   | 1017                                                                              |                                                                                   |                                                                                   | 942                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 28.6                                                                              |                                                                                   |                                                                                   | 8.6                                                                               |                                                                                   |                                                                                   | 9.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 2                                                                                 |                                                                                   | 5                                                                                 |                                                                                   | 6                                                                                 | 8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 53.0                                                                              |                                                                                   | 7.9                                                                               |                                                                                   | 45.1                                                                              | 20.7                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 48.5                                                                              |                                                                                   | 9.5                                                                               |                                                                                   | 34.5                                                                              | 32.5                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 11.4                                                                              |                                                                                   | 4.3                                                                               |                                                                                   | 11.4                                                                              | 14.0                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 7.7                                                                               |                                                                                   | 0.0                                                                               |                                                                                   | 5.2                                                                               | 2.2                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 13.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary 3: 12th Avenue & SR 198 EB Off Ramps

10/31/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |  |  |                                                                                     |  |  |
| Traffic Volume (veh/h)       | 454                                                                               | 0                                                                                 | 16                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 459                                                                                 | 122                                                                                 | 0                                                                                   | 333                                                                                 | 246                                                                                 |
| Future Volume (veh/h)        | 454                                                                               | 0                                                                                 | 16                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 459                                                                                 | 122                                                                                 | 0                                                                                   | 333                                                                                 | 246                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 0                                                                                 | 1856                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1856                                                                                | 1856                                                                                | 0                                                                                   | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 504                                                                               | 0                                                                                 | 18                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 510                                                                                 | 0                                                                                   | 0                                                                                   | 370                                                                                 | 0                                                                                   |
| Peak Hour Factor             | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 0                                                                                 | 3                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 3                                                                                   | 3                                                                                   | 0                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 675                                                                               | 0                                                                                 | 310                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2346                                                                                |                                                                                     | 0                                                                                   | 2346                                                                                |                                                                                     |
| Arrive On Green              | 0.20                                                                              | 0.00                                                                              | 0.20                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 0.67                                                                                | 0.00                                                                                | 0.00                                                                                | 0.67                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 3428                                                                              | 0                                                                                 | 1572                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 3618                                                                                | 1572                                                                                | 0                                                                                   | 3618                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 504                                                                               | 0                                                                                 | 18                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 510                                                                                 | 0                                                                                   | 0                                                                                   | 370                                                                                 | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1714                                                                              | 0                                                                                 | 1572                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1763                                                                                | 1572                                                                                | 0                                                                                   | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 9.0                                                                               | 0.0                                                                               | 0.6                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 3.7                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 2.6                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 9.0                                                                               | 0.0                                                                               | 0.6                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 3.7                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 2.6                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                |                                                                                     | 1.00                                                                                | 0.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 675                                                                               | 0                                                                                 | 310                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2346                                                                                |                                                                                     | 0                                                                                   | 2346                                                                                |                                                                                     |
| V/C Ratio(X)                 | 0.75                                                                              | 0.00                                                                              | 0.06                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 0.22                                                                                |                                                                                     | 0.00                                                                                | 0.16                                                                                |                                                                                     |
| Avail Cap(c_a), veh/h        | 1966                                                                              | 0                                                                                 | 902                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2346                                                                                |                                                                                     | 0                                                                                   | 2346                                                                                |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 24.7                                                                              | 0.0                                                                               | 21.3                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 4.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 4.1                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 1.7                                                                               | 0.0                                                                               | 0.1                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 0.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 3.4                                                                               | 0.0                                                                               | 0.2                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 0.9                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.6                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 26.4                                                                              | 0.0                                                                               | 21.4                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 4.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 4.2                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | A                                                                                   | A                                                                                   |                                                                                     | A                                                                                   | A                                                                                   |                                                                                     |
| Approach Vol, veh/h          | 522                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 510                                                                                 |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 26.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 4.5                                                                                 |                                                                                     |                                                                                     | 4.2                                                                                 |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 48.0                                                                              |                                                                                   |                                                                                   | 17.4                                                                              |                                                                                   |                                                                                   | 48.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               |                                                                                   |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                   | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 43.5                                                                              |                                                                                   |                                                                                   | 37.5                                                                              |                                                                                   |                                                                                   | 43.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 5.7                                                                               |                                                                                   |                                                                                   | 11.0                                                                              |                                                                                   |                                                                                   | 4.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 3.5                                                                               |                                                                                   |                                                                                   | 1.8                                                                               |                                                                                   |                                                                                   | 2.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 12.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 4: Campus Drive & Lacey Boulevard

10/31/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 20                                                                                | 390                                                                               | 73                                                                                | 94                                                                                | 390                                                                               | 43                                                                                | 35                                                                                  | 47                                                                                  | 67                                                                                  | 44                                                                                  | 65                                                                                  | 12                                                                                  |
| Future Volume (veh/h)        | 20                                                                                | 390                                                                               | 73                                                                                | 94                                                                                | 390                                                                               | 43                                                                                | 35                                                                                  | 47                                                                                  | 67                                                                                  | 44                                                                                  | 65                                                                                  | 12                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 22                                                                                | 424                                                                               | 79                                                                                | 102                                                                               | 424                                                                               | 47                                                                                | 38                                                                                  | 51                                                                                  | 73                                                                                  | 48                                                                                  | 71                                                                                  | 13                                                                                  |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 44                                                                                | 615                                                                               | 274                                                                               | 133                                                                               | 791                                                                               | 353                                                                               | 67                                                                                  | 299                                                                                 | 428                                                                                 | 93                                                                                  | 832                                                                                 | 705                                                                                 |
| Arrive On Green              | 0.02                                                                              | 0.17                                                                              | 0.17                                                                              | 0.08                                                                              | 0.22                                                                              | 0.22                                                                              | 0.04                                                                                | 0.43                                                                                | 0.43                                                                                | 0.05                                                                                | 0.45                                                                                | 0.45                                                                                |
| Sat Flow, veh/h              | 1767                                                                              | 3526                                                                              | 1572                                                                              | 1767                                                                              | 3526                                                                              | 1572                                                                              | 1767                                                                                | 690                                                                                 | 988                                                                                 | 1767                                                                                | 1856                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 22                                                                                | 424                                                                               | 79                                                                                | 102                                                                               | 424                                                                               | 47                                                                                | 38                                                                                  | 0                                                                                   | 124                                                                                 | 48                                                                                  | 71                                                                                  | 13                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1767                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                                | 0                                                                                   | 1678                                                                                | 1767                                                                                | 1856                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 0.8                                                                               | 7.7                                                                               | 3.0                                                                               | 3.9                                                                               | 7.2                                                                               | 1.2                                                                               | 1.4                                                                                 | 0.0                                                                                 | 3.1                                                                                 | 1.8                                                                                 | 1.5                                                                                 | 0.3                                                                                 |
| Cycle Q Clear(g_c), s        | 0.8                                                                               | 7.7                                                                               | 3.0                                                                               | 3.9                                                                               | 7.2                                                                               | 1.2                                                                               | 1.4                                                                                 | 0.0                                                                                 | 3.1                                                                                 | 1.8                                                                                 | 1.5                                                                                 | 0.3                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 0.59                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 44                                                                                | 615                                                                               | 274                                                                               | 133                                                                               | 791                                                                               | 353                                                                               | 67                                                                                  | 0                                                                                   | 727                                                                                 | 93                                                                                  | 832                                                                                 | 705                                                                                 |
| V/C Ratio(X)                 | 0.50                                                                              | 0.69                                                                              | 0.29                                                                              | 0.77                                                                              | 0.54                                                                              | 0.13                                                                              | 0.57                                                                                | 0.00                                                                                | 0.17                                                                                | 0.52                                                                                | 0.09                                                                                | 0.02                                                                                |
| Avail Cap(c_a), veh/h        | 169                                                                               | 1062                                                                              | 474                                                                               | 351                                                                               | 1425                                                                              | 636                                                                               | 195                                                                                 | 0                                                                                   | 727                                                                                 | 221                                                                                 | 832                                                                                 | 705                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 32.7                                                                              | 26.4                                                                              | 24.4                                                                              | 30.9                                                                              | 23.3                                                                              | 12.2                                                                              | 32.2                                                                                | 0.0                                                                                 | 11.8                                                                                | 31.4                                                                                | 10.8                                                                                | 10.4                                                                                |
| Incr Delay (d2), s/veh       | 8.4                                                                               | 1.4                                                                               | 0.6                                                                               | 9.0                                                                               | 0.6                                                                               | 0.2                                                                               | 7.5                                                                                 | 0.0                                                                                 | 0.5                                                                                 | 4.4                                                                                 | 0.2                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.4                                                                               | 3.1                                                                               | 1.1                                                                               | 1.9                                                                               | 2.8                                                                               | 0.6                                                                               | 0.7                                                                                 | 0.0                                                                                 | 1.1                                                                                 | 0.9                                                                                 | 0.6                                                                                 | 0.1                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 41.2                                                                              | 27.7                                                                              | 25.0                                                                              | 39.9                                                                              | 23.8                                                                              | 12.4                                                                              | 39.7                                                                                | 0.0                                                                                 | 12.3                                                                                | 35.8                                                                                | 11.0                                                                                | 10.5                                                                                |
| LnGrp LOS                    | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 | B                                                                                 | D                                                                                   | A                                                                                   | B                                                                                   | D                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 525                                                                               |                                                                                   |                                                                                   | 573                                                                               |                                                                                   |                                                                                     | 162                                                                                 |                                                                                     |                                                                                     | 132                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 27.9                                                                              |                                                                                   |                                                                                   | 25.7                                                                              |                                                                                   |                                                                                     | 18.7                                                                                |                                                                                     |                                                                                     | 20.0                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 8.1                                                                               | 34.0                                                                              | 9.6                                                                               | 16.4                                                                              | 7.1                                                                               | 35.0                                                                              | 6.2                                                                                 | 19.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 8.5                                                                               | 29.5                                                                              | 13.5                                                                              | 20.5                                                                              | 7.5                                                                               | 30.5                                                                              | 6.5                                                                                 | 27.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 3.8                                                                               | 5.1                                                                               | 5.9                                                                               | 9.7                                                                               | 3.4                                                                               | 3.5                                                                               | 2.8                                                                                 | 9.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.7                                                                               | 0.1                                                                               | 2.2                                                                               | 0.0                                                                               | 0.4                                                                               | 0.0                                                                                 | 2.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 25.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 7: 11th Avenue & Lacey Boulevard

10/31/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 83                                                                                | 176                                                                               | 110                                                                               | 42                                                                                | 226                                                                               | 42                                                                                | 259                                                                                | 451                                                                                 | 50                                                                                  | 61                                                                                  | 516                                                                                 | 131                                                                                 |
| Future Volume (veh/h)        | 83                                                                                | 176                                                                               | 110                                                                               | 42                                                                                | 226                                                                               | 42                                                                                | 259                                                                                | 451                                                                                 | 50                                                                                  | 61                                                                                  | 516                                                                                 | 131                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                 |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                               | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 92                                                                                | 196                                                                               | 122                                                                               | 47                                                                                | 251                                                                               | 47                                                                                | 288                                                                                | 501                                                                                 | 56                                                                                  | 68                                                                                  | 573                                                                                 | 146                                                                                 |
| Peak Hour Factor             | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                               | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                  | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 212                                                                               | 541                                                                               | 242                                                                               | 77                                                                                | 403                                                                               | 74                                                                                | 400                                                                                | 1516                                                                                | 169                                                                                 | 96                                                                                  | 1451                                                                                | 647                                                                                 |
| Arrive On Green              | 0.06                                                                              | 0.15                                                                              | 0.15                                                                              | 0.04                                                                              | 0.14                                                                              | 0.14                                                                              | 0.12                                                                               | 0.47                                                                                | 0.47                                                                                | 0.05                                                                                | 0.41                                                                                | 0.41                                                                                |
| Sat Flow, veh/h              | 3428                                                                              | 3526                                                                              | 1572                                                                              | 1767                                                                              | 2972                                                                              | 548                                                                               | 3428                                                                               | 3198                                                                                | 356                                                                                 | 1767                                                                                | 3526                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 92                                                                                | 196                                                                               | 122                                                                               | 47                                                                                | 147                                                                               | 151                                                                               | 288                                                                                | 275                                                                                 | 282                                                                                 | 68                                                                                  | 573                                                                                 | 146                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1714                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 1757                                                                              | 1714                                                                               | 1763                                                                                | 1791                                                                                | 1767                                                                                | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 1.7                                                                               | 3.3                                                                               | 3.3                                                                               | 1.7                                                                               | 5.2                                                                               | 5.3                                                                               | 5.3                                                                                | 6.4                                                                                 | 6.4                                                                                 | 2.5                                                                                 | 7.5                                                                                 | 4.0                                                                                 |
| Cycle Q Clear(g_c), s        | 1.7                                                                               | 3.3                                                                               | 3.3                                                                               | 1.7                                                                               | 5.2                                                                               | 5.3                                                                               | 5.3                                                                                | 6.4                                                                                 | 6.4                                                                                 | 2.5                                                                                 | 7.5                                                                                 | 4.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.31                                                                              | 1.00                                                                               |                                                                                     | 0.20                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 212                                                                               | 541                                                                               | 242                                                                               | 77                                                                                | 239                                                                               | 238                                                                               | 400                                                                                | 836                                                                                 | 849                                                                                 | 96                                                                                  | 1451                                                                                | 647                                                                                 |
| V/C Ratio(X)                 | 0.43                                                                              | 0.36                                                                              | 0.51                                                                              | 0.61                                                                              | 0.62                                                                              | 0.63                                                                              | 0.72                                                                               | 0.33                                                                                | 0.33                                                                                | 0.71                                                                                | 0.39                                                                                | 0.23                                                                                |
| Avail Cap(c_a), veh/h        | 287                                                                               | 1440                                                                              | 642                                                                               | 180                                                                               | 752                                                                               | 750                                                                               | 601                                                                                | 836                                                                                 | 849                                                                                 | 245                                                                                 | 1451                                                                                | 647                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 29.7                                                                              | 24.9                                                                              | 12.5                                                                              | 30.8                                                                              | 26.8                                                                              | 26.8                                                                              | 27.9                                                                               | 10.8                                                                                | 10.8                                                                                | 30.5                                                                                | 13.6                                                                                | 12.5                                                                                |
| Incr Delay (d2), s/veh       | 1.4                                                                               | 0.4                                                                               | 1.6                                                                               | 7.4                                                                               | 2.6                                                                               | 2.8                                                                               | 2.4                                                                                | 1.1                                                                                 | 1.0                                                                                 | 9.3                                                                                 | 0.8                                                                                 | 0.8                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.7                                                                               | 1.3                                                                               | 1.7                                                                               | 0.9                                                                               | 2.2                                                                               | 2.3                                                                               | 2.2                                                                                | 2.4                                                                                 | 2.4                                                                                 | 1.2                                                                                 | 2.8                                                                                 | 1.4                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 31.1                                                                              | 25.3                                                                              | 14.1                                                                              | 38.2                                                                              | 29.3                                                                              | 29.6                                                                              | 30.4                                                                               | 11.8                                                                                | 11.8                                                                                | 39.8                                                                                | 14.4                                                                                | 13.3                                                                                |
| LnGrp LOS                    | C                                                                                 | C                                                                                 | B                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | C                                                                                  | B                                                                                   | B                                                                                   | D                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 410                                                                               |                                                                                   |                                                                                   | 345                                                                               |                                                                                   |                                                                                   | 845                                                                                |                                                                                     |                                                                                     | 787                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 23.3                                                                              |                                                                                   |                                                                                   | 30.7                                                                              |                                                                                   |                                                                                   | 18.1                                                                               |                                                                                     |                                                                                     | 16.4                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                  |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 8.1                                                                               | 35.6                                                                              | 7.4                                                                               | 14.6                                                                              | 12.2                                                                              | 31.5                                                                              | 8.6                                                                                | 13.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 9.1                                                                               | 29.4                                                                              | 6.7                                                                               | 26.8                                                                              | 11.5                                                                              | 27.0                                                                              | 5.5                                                                                | 28.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 4.5                                                                               | 8.4                                                                               | 3.7                                                                               | 5.3                                                                               | 7.3                                                                               | 9.5                                                                               | 3.7                                                                                | 7.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 3.2                                                                               | 0.0                                                                               | 1.5                                                                               | 0.4                                                                               | 4.0                                                                               | 0.0                                                                                | 1.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 20.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 8: 11th Avenue & 7th Street

10/31/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 37                                                                                | 98                                                                                | 66                                                                                | 73                                                                                | 114                                                                               | 48                                                                                | 154                                                                                | 450                                                                                 | 98                                                                                  | 71                                                                                  | 339                                                                                 | 64                                                                                  |
| Future Volume (veh/h)        | 37                                                                                | 98                                                                                | 66                                                                                | 73                                                                                | 114                                                                               | 48                                                                                | 154                                                                                | 450                                                                                 | 98                                                                                  | 71                                                                                  | 339                                                                                 | 64                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                 |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                               | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 42                                                                                | 111                                                                               | 75                                                                                | 83                                                                                | 130                                                                               | 55                                                                                | 175                                                                                | 511                                                                                 | 111                                                                                 | 81                                                                                  | 385                                                                                 | 73                                                                                  |
| Peak Hour Factor             | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                               | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                  | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 142                                                                               | 212                                                                               | 133                                                                               | 109                                                                               | 299                                                                               | 121                                                                               | 221                                                                                | 1709                                                                                | 762                                                                                 | 107                                                                                 | 1483                                                                                | 661                                                                                 |
| Arrive On Green              | 0.04                                                                              | 0.10                                                                              | 0.10                                                                              | 0.06                                                                              | 0.12                                                                              | 0.12                                                                              | 0.12                                                                               | 0.48                                                                                | 0.48                                                                                | 0.06                                                                                | 0.42                                                                                | 0.42                                                                                |
| Sat Flow, veh/h              | 3428                                                                              | 2078                                                                              | 1305                                                                              | 1767                                                                              | 2450                                                                              | 990                                                                               | 1767                                                                               | 3526                                                                                | 1572                                                                                | 1767                                                                                | 3526                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 42                                                                                | 93                                                                                | 93                                                                                | 83                                                                                | 92                                                                                | 93                                                                                | 175                                                                                | 511                                                                                 | 111                                                                                 | 81                                                                                  | 385                                                                                 | 73                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1714                                                                              | 1763                                                                              | 1621                                                                              | 1767                                                                              | 1763                                                                              | 1677                                                                              | 1767                                                                               | 1763                                                                                | 1572                                                                                | 1767                                                                                | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 0.7                                                                               | 3.1                                                                               | 3.4                                                                               | 2.9                                                                               | 3.0                                                                               | 3.2                                                                               | 5.9                                                                                | 5.4                                                                                 | 1.4                                                                                 | 2.8                                                                                 | 4.4                                                                                 | 1.7                                                                                 |
| Cycle Q Clear(g_c), s        | 0.7                                                                               | 3.1                                                                               | 3.4                                                                               | 2.9                                                                               | 3.0                                                                               | 3.2                                                                               | 5.9                                                                                | 5.4                                                                                 | 1.4                                                                                 | 2.8                                                                                 | 4.4                                                                                 | 1.7                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.81                                                                              | 1.00                                                                              |                                                                                   | 0.59                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 142                                                                               | 180                                                                               | 165                                                                               | 109                                                                               | 215                                                                               | 204                                                                               | 221                                                                                | 1709                                                                                | 762                                                                                 | 107                                                                                 | 1483                                                                                | 661                                                                                 |
| V/C Ratio(X)                 | 0.29                                                                              | 0.52                                                                              | 0.56                                                                              | 0.76                                                                              | 0.43                                                                              | 0.46                                                                              | 0.79                                                                               | 0.30                                                                                | 0.15                                                                                | 0.75                                                                                | 0.26                                                                                | 0.11                                                                                |
| Avail Cap(c_a), veh/h        | 277                                                                               | 741                                                                               | 681                                                                               | 214                                                                               | 813                                                                               | 773                                                                               | 357                                                                                | 1709                                                                                | 762                                                                                 | 280                                                                                 | 1483                                                                                | 661                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 28.8                                                                              | 26.3                                                                              | 26.4                                                                              | 28.6                                                                              | 25.1                                                                              | 25.2                                                                              | 26.3                                                                               | 9.6                                                                                 | 3.2                                                                                 | 28.6                                                                                | 11.7                                                                                | 10.9                                                                                |
| Incr Delay (d2), s/veh       | 1.1                                                                               | 2.3                                                                               | 3.0                                                                               | 10.6                                                                              | 1.3                                                                               | 1.6                                                                               | 6.3                                                                                | 0.4                                                                                 | 0.4                                                                                 | 10.2                                                                                | 0.4                                                                                 | 0.3                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.3                                                                               | 1.3                                                                               | 1.4                                                                               | 1.5                                                                               | 1.3                                                                               | 1.3                                                                               | 2.7                                                                                | 1.8                                                                                 | 0.8                                                                                 | 1.4                                                                                 | 1.6                                                                                 | 0.6                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 29.9                                                                              | 28.6                                                                              | 29.4                                                                              | 39.2                                                                              | 26.5                                                                              | 26.8                                                                              | 32.6                                                                               | 10.1                                                                                | 3.6                                                                                 | 38.8                                                                                | 12.1                                                                                | 11.2                                                                                |
| LnGrp LOS                    | C                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | C                                                                                  | B                                                                                   | A                                                                                   | D                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 228                                                                               |                                                                                   |                                                                                   | 268                                                                               |                                                                                   |                                                                                   | 797                                                                                |                                                                                     |                                                                                     | 539                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 29.2                                                                              |                                                                                   |                                                                                   | 30.5                                                                              |                                                                                   |                                                                                   | 14.1                                                                               |                                                                                     |                                                                                     | 16.0                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                  |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 8.3                                                                               | 34.5                                                                              | 8.3                                                                               | 10.8                                                                              | 12.2                                                                              | 30.5                                                                              | 7.1                                                                                | 12.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 9.8                                                                               | 28.7                                                                              | 7.5                                                                               | 26.0                                                                              | 12.5                                                                              | 26.0                                                                              | 5.0                                                                                | 28.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 4.8                                                                               | 7.4                                                                               | 4.9                                                                               | 5.4                                                                               | 7.9                                                                               | 6.4                                                                               | 2.7                                                                                | 5.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 3.7                                                                               | 0.0                                                                               | 0.9                                                                               | 0.2                                                                               | 2.6                                                                               | 0.0                                                                                | 1.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 18.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 10: 11th Avenue & 5th Street

10/31/2020

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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |                                                                                   |  |                                                                                   |  |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)       | 39                                                                                | 0                                                                                 | 60                                                                                | 4                                                                                 | 0                                                                                 | 5                                                                                 | 166                                                                                 | 897                                                                                 | 23                                                                                  | 1                                                                                   | 503                                                                                 | 94                                                                                  |
| Future Volume (veh/h)        | 39                                                                                | 0                                                                                 | 60                                                                                | 4                                                                                 | 0                                                                                 | 5                                                                                 | 166                                                                                 | 897                                                                                 | 23                                                                                  | 1                                                                                   | 503                                                                                 | 94                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 45                                                                                | 0                                                                                 | 70                                                                                | 5                                                                                 | 0                                                                                 | 6                                                                                 | 193                                                                                 | 1043                                                                                | 27                                                                                  | 1                                                                                   | 585                                                                                 | 109                                                                                 |
| Peak Hour Factor             | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                                | 0.86                                                                                | 0.86                                                                                | 0.86                                                                                | 0.86                                                                                | 0.86                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 233                                                                               | 0                                                                                 | 115                                                                               | 103                                                                               | 22                                                                                | 50                                                                                | 246                                                                                 | 2493                                                                                | 65                                                                                  | 3                                                                                   | 2018                                                                                | 900                                                                                 |
| Arrive On Green              | 0.07                                                                              | 0.00                                                                              | 0.07                                                                              | 0.07                                                                              | 0.00                                                                              | 0.07                                                                              | 0.14                                                                                | 0.71                                                                                | 0.71                                                                                | 0.00                                                                                | 0.57                                                                                | 0.57                                                                                |
| Sat Flow, veh/h              | 1399                                                                              | 0                                                                                 | 1572                                                                              | 269                                                                               | 302                                                                               | 686                                                                               | 1767                                                                                | 3511                                                                                | 91                                                                                  | 1767                                                                                | 3526                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 45                                                                                | 0                                                                                 | 70                                                                                | 11                                                                                | 0                                                                                 | 0                                                                                 | 193                                                                                 | 524                                                                                 | 546                                                                                 | 1                                                                                   | 585                                                                                 | 109                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1399                                                                              | 0                                                                                 | 1572                                                                              | 1257                                                                              | 0                                                                                 | 0                                                                                 | 1767                                                                                | 1763                                                                                | 1839                                                                                | 1767                                                                                | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 0.0                                                                               | 2.7                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 6.6                                                                                 | 7.7                                                                                 | 7.7                                                                                 | 0.0                                                                                 | 5.3                                                                                 | 2.0                                                                                 |
| Cycle Q Clear(g_c), s        | 1.5                                                                               | 0.0                                                                               | 2.7                                                                               | 2.7                                                                               | 0.0                                                                               | 0.0                                                                               | 6.6                                                                                 | 7.7                                                                                 | 7.7                                                                                 | 0.0                                                                                 | 5.3                                                                                 | 2.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 0.45                                                                              |                                                                                   | 0.55                                                                              | 1.00                                                                                |                                                                                     | 0.05                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 233                                                                               | 0                                                                                 | 115                                                                               | 175                                                                               | 0                                                                                 | 0                                                                                 | 246                                                                                 | 1252                                                                                | 1306                                                                                | 3                                                                                   | 2018                                                                                | 900                                                                                 |
| V/C Ratio(X)                 | 0.19                                                                              | 0.00                                                                              | 0.61                                                                              | 0.06                                                                              | 0.00                                                                              | 0.00                                                                              | 0.79                                                                                | 0.42                                                                                | 0.42                                                                                | 0.35                                                                                | 0.29                                                                                | 0.12                                                                                |
| Avail Cap(c_a), veh/h        | 722                                                                               | 0                                                                                 | 665                                                                               | 681                                                                               | 0                                                                                 | 0                                                                                 | 606                                                                                 | 1252                                                                                | 1306                                                                                | 155                                                                                 | 2018                                                                                | 900                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 27.6                                                                              | 0.0                                                                               | 28.2                                                                              | 27.1                                                                              | 0.0                                                                               | 0.0                                                                               | 26.1                                                                                | 3.7                                                                                 | 3.7                                                                                 | 31.3                                                                                | 6.9                                                                                 | 6.2                                                                                 |
| Incr Delay (d2), s/veh       | 0.4                                                                               | 0.0                                                                               | 5.1                                                                               | 0.1                                                                               | 0.0                                                                               | 0.0                                                                               | 5.5                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 62.4                                                                                | 0.4                                                                                 | 0.3                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.6                                                                               | 0.0                                                                               | 1.1                                                                               | 0.2                                                                               | 0.0                                                                               | 0.0                                                                               | 3.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 0.1                                                                                 | 1.7                                                                                 | 0.6                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 28.0                                                                              | 0.0                                                                               | 33.3                                                                              | 27.2                                                                              | 0.0                                                                               | 0.0                                                                               | 31.5                                                                                | 4.8                                                                                 | 4.7                                                                                 | 93.6                                                                                | 7.2                                                                                 | 6.4                                                                                 |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | C                                                                                 | C                                                                                 | A                                                                                 | A                                                                                 | C                                                                                   | A                                                                                   | A                                                                                   | F                                                                                   | A                                                                                   | A                                                                                   |
| Approach Vol, veh/h          | 115                                                                               |                                                                                   |                                                                                   | 11                                                                                |                                                                                   |                                                                                   | 1263                                                                                |                                                                                     |                                                                                     | 695                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 31.2                                                                              |                                                                                   |                                                                                   | 27.2                                                                              |                                                                                   |                                                                                   | 8.8                                                                                 |                                                                                     |                                                                                     | 7.2                                                                                 |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 4.6                                                                               | 49.0                                                                              |                                                                                   | 9.1                                                                               | 13.2                                                                              | 40.4                                                                              |                                                                                     | 9.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               |                                                                                     | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 5.5                                                                               | 44.5                                                                              |                                                                                   | 26.5                                                                              | 21.5                                                                              | 28.5                                                                              |                                                                                     | 26.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 2.0                                                                               | 9.7                                                                               |                                                                                   | 4.7                                                                               | 8.6                                                                               | 7.3                                                                               |                                                                                     | 4.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 8.7                                                                               |                                                                                   | 0.5                                                                               | 0.4                                                                               | 4.4                                                                               |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 9.6                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# HCM 6th Signalized Intersection Summary

## 11: 11th Avenue & SR 198 WB On Ramp/4th Street

10/31/2020

|                              |  |      |     |      |      |      |      |      |      |      |      |      |
|------------------------------|------------------------------------------------------------------------------------|------|-----|------|------|------|------|------|------|------|------|------|
| Movement                     | EBL                                                                                | EBT  | EBR | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations          |                                                                                    |      |     | ↰    | ↱    | ↰    | ↰    | ↱    |      |      | ↱    | ↰    |
| Traffic Volume (veh/h)       | 0                                                                                  | 0    | 0   | 118  | 16   | 335  | 52   | 759  | 0    | 0    | 434  | 163  |
| Future Volume (veh/h)        | 0                                                                                  | 0    | 0   | 118  | 16   | 335  | 52   | 759  | 0    | 0    | 434  | 163  |
| Initial Q (Qb), veh          |                                                                                    |      |     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Ped-Bike Adj(A_pbT)          |                                                                                    |      |     | 1.00 |      | 1.00 | 1.00 |      | 1.00 | 1.00 |      | 1.00 |
| Parking Bus, Adj             |                                                                                    |      |     | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach        |                                                                                    |      |     | No   |      |      | No   |      |      |      | No   |      |
| Adj Sat Flow, veh/h/ln       |                                                                                    |      |     | 1856 | 1856 | 1856 | 1856 | 1856 | 0    | 0    | 1856 | 1856 |
| Adj Flow Rate, veh/h         |                                                                                    |      |     | 137  | 19   | 390  | 60   | 883  | 0    | 0    | 505  | 190  |
| Peak Hour Factor             |                                                                                    |      |     | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 |
| Percent Heavy Veh, %         |                                                                                    |      |     | 3    | 3    | 3    | 3    | 3    | 0    | 0    | 3    | 3    |
| Cap, veh/h                   |                                                                                    |      |     | 507  | 533  | 451  | 86   | 2074 | 0    | 0    | 1684 | 751  |
| Arrive On Green              |                                                                                    |      |     | 0.29 | 0.29 | 0.29 | 0.05 | 0.59 | 0.00 | 0.00 | 0.48 | 0.48 |
| Sat Flow, veh/h              |                                                                                    |      |     | 1767 | 1856 | 1572 | 1767 | 3618 | 0    | 0    | 3618 | 1572 |
| Grp Volume(v), veh/h         |                                                                                    |      |     | 137  | 19   | 390  | 60   | 883  | 0    | 0    | 505  | 190  |
| Grp Sat Flow(s),veh/h/ln     |                                                                                    |      |     | 1767 | 1856 | 1572 | 1767 | 1763 | 0    | 0    | 1763 | 1572 |
| Q Serve(g_s), s              |                                                                                    |      |     | 4.3  | 0.5  | 17.0 | 2.4  | 9.9  | 0.0  | 0.0  | 6.3  | 5.2  |
| Cycle Q Clear(g_c), s        |                                                                                    |      |     | 4.3  | 0.5  | 17.0 | 2.4  | 9.9  | 0.0  | 0.0  | 6.3  | 5.2  |
| Prop In Lane                 |                                                                                    |      |     | 1.00 |      | 1.00 | 1.00 |      | 0.00 | 0.00 |      | 1.00 |
| Lane Grp Cap(c), veh/h       |                                                                                    |      |     | 507  | 533  | 451  | 86   | 2074 | 0    | 0    | 1684 | 751  |
| V/C Ratio(X)                 |                                                                                    |      |     | 0.27 | 0.04 | 0.86 | 0.70 | 0.43 | 0.00 | 0.00 | 0.30 | 0.25 |
| Avail Cap(c_a), veh/h        |                                                                                    |      |     | 942  | 989  | 838  | 257  | 2074 | 0    | 0    | 1684 | 751  |
| HCM Platoon Ratio            |                                                                                    |      |     | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I)           |                                                                                    |      |     | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh     |                                                                                    |      |     | 19.9 | 18.5 | 24.4 | 33.9 | 8.2  | 0.0  | 0.0  | 11.5 | 11.2 |
| Incr Delay (d2), s/veh       |                                                                                    |      |     | 0.3  | 0.0  | 5.1  | 9.9  | 0.6  | 0.0  | 0.0  | 0.5  | 0.8  |
| Initial Q Delay(d3),s/veh    |                                                                                    |      |     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile BackOfQ(50%),veh/ln     |                                                                                    |      |     | 1.6  | 0.2  | 6.2  | 1.2  | 3.3  | 0.0  | 0.0  | 2.3  | 1.8  |
| Unsig. Movement Delay, s/veh |                                                                                    |      |     |      |      |      |      |      |      |      |      |      |
| LnGrp Delay(d),s/veh         |                                                                                    |      |     | 20.2 | 18.6 | 29.5 | 43.8 | 8.8  | 0.0  | 0.0  | 12.0 | 12.0 |
| LnGrp LOS                    |                                                                                    |      |     | C    | B    | C    | D    | A    | A    | A    | B    | B    |
| Approach Vol, veh/h          |                                                                                    |      |     |      | 546  |      |      | 943  |      |      | 695  |      |
| Approach Delay, s/veh        |                                                                                    |      |     |      | 26.8 |      |      | 11.0 |      |      | 12.0 |      |
| Approach LOS                 |                                                                                    |      |     |      | C    |      |      | B    |      |      | B    |      |
| Timer - Assigned Phs         |                                                                                    | 2    |     |      | 5    | 6    |      | 8    |      |      |      |      |
| Phs Duration (G+Y+Rc), s     |                                                                                    | 47.0 |     |      | 8.0  | 39.0 |      | 25.2 |      |      |      |      |
| Change Period (Y+Rc), s      |                                                                                    | 4.5  |     |      | 4.5  | 4.5  |      | 4.5  |      |      |      |      |
| Max Green Setting (Gmax), s  |                                                                                    | 42.5 |     |      | 10.5 | 27.5 |      | 38.5 |      |      |      |      |
| Max Q Clear Time (g_c+I1), s |                                                                                    | 11.9 |     |      | 4.4  | 8.3  |      | 19.0 |      |      |      |      |
| Green Ext Time (p_c), s      |                                                                                    | 7.3  |     |      | 0.0  | 3.8  |      | 1.7  |      |      |      |      |
| <b>Intersection Summary</b>  |                                                                                    |      |     |      |      |      |      |      |      |      |      |      |
| HCM 6th Ctrl Delay           |                                                                                    |      |     | 15.3 |      |      |      |      |      |      |      |      |
| HCM 6th LOS                  |                                                                                    |      |     | B    |      |      |      |      |      |      |      |      |

# HCM 6th Signalized Intersection Summary 12: 11th Avenue & SR 198 EB Off Ramp/3rd Street

10/31/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |                                                                                   |                                                                                   |                                                                                   |                                                                                    |  |  |  |  |                                                                                     |
| Traffic Volume (veh/h)       | 241                                                                               | 140                                                                               | 85                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 572                                                                                 | 134                                                                                 | 126                                                                                 | 429                                                                                 | 0                                                                                   |
| Future Volume (veh/h)        | 241                                                                               | 140                                                                               | 85                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 572                                                                                 | 134                                                                                 | 126                                                                                 | 429                                                                                 | 0                                                                                   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                 |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 0                                                                                   |
| Adj Flow Rate, veh/h         | 301                                                                               | 175                                                                               | 106                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 715                                                                                 | 168                                                                                 | 158                                                                                 | 536                                                                                 | 0                                                                                   |
| Peak Hour Factor             | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.80                                                                               | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 0                                                                                   |
| Cap, veh/h                   | 348                                                                               | 202                                                                               | 481                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1459                                                                                | 651                                                                                 | 196                                                                                 | 2049                                                                                | 0                                                                                   |
| Arrive On Green              | 0.31                                                                              | 0.31                                                                              | 0.31                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.41                                                                                | 0.41                                                                                | 0.11                                                                                | 0.58                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 1137                                                                              | 661                                                                               | 1572                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 3618                                                                                | 1572                                                                                | 1767                                                                                | 3618                                                                                | 0                                                                                   |
| Grp Volume(v), veh/h         | 476                                                                               | 0                                                                                 | 106                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 715                                                                                 | 168                                                                                 | 158                                                                                 | 536                                                                                 | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1799                                                                              | 0                                                                                 | 1572                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1763                                                                                | 1572                                                                                | 1767                                                                                | 1763                                                                                | 0                                                                                   |
| Q Serve(g_s), s              | 20.0                                                                              | 0.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 11.9                                                                                | 5.6                                                                                 | 7.0                                                                                 | 6.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 20.0                                                                              | 0.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 11.9                                                                                | 5.6                                                                                 | 7.0                                                                                 | 6.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 0.63                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.00                                                                                |
| Lane Grp Cap(c), veh/h       | 551                                                                               | 0                                                                                 | 481                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1459                                                                                | 651                                                                                 | 196                                                                                 | 2049                                                                                | 0                                                                                   |
| V/C Ratio(X)                 | 0.86                                                                              | 0.00                                                                              | 0.22                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.49                                                                                | 0.26                                                                                | 0.80                                                                                | 0.26                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 776                                                                               | 0                                                                                 | 678                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1459                                                                                | 651                                                                                 | 320                                                                                 | 2049                                                                                | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 26.2                                                                              | 0.0                                                                               | 20.6                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 17.2                                                                                | 15.4                                                                                | 34.7                                                                                | 8.3                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 7.3                                                                               | 0.0                                                                               | 0.2                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 1.2                                                                                 | 1.0                                                                                 | 7.5                                                                                 | 0.3                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 8.8                                                                               | 0.0                                                                               | 1.4                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 4.6                                                                                 | 2.0                                                                                 | 3.3                                                                                 | 2.1                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 33.5                                                                              | 0.0                                                                               | 20.9                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 18.4                                                                                | 16.3                                                                                | 42.2                                                                                | 8.6                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | A                                                                                  | B                                                                                   | B                                                                                   | D                                                                                   | A                                                                                   | A                                                                                   |
| Approach Vol, veh/h          | 582                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 883                                                                                |                                                                                     |                                                                                     | 694                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 31.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 18.0                                                                               |                                                                                     |                                                                                     | 16.2                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | B                                                                                  |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 13.4                                                                              | 37.6                                                                              | 29.0                                                                              |                                                                                   | 51.0                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 14.5                                                                              | 27.5                                                                              | 34.5                                                                              |                                                                                   | 46.5                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 9.0                                                                               | 13.9                                                                              | 22.0                                                                              |                                                                                   | 8.0                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.2                                                                               | 4.4                                                                               | 2.5                                                                               |                                                                                   | 4.1                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 21.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

HCM 6th AWSC  
5: Campus Dr/Campus Drive & 7th Street

10/31/2020

| Intersection              |      |
|---------------------------|------|
| Intersection Delay, s/veh | 11.9 |
| Intersection LOS          | B    |

| Movement            | EBL                                                                               | EBT                                                                               | EBR  | WBL                                                                               | WBT                                                                               | WBR  | NBL  | NBT                                                                                 | NBR  | SBL  | SBT                                                                                 | SBR  |
|---------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|
| Lane Configurations |  |  |      |  |  |      |      |  |      |      |  |      |
| Traffic Vol, veh/h  | 82                                                                                | 117                                                                               | 39   | 41                                                                                | 144                                                                               | 31   | 31   | 91                                                                                  | 23   | 22   | 124                                                                                 | 33   |
| Future Vol, veh/h   | 82                                                                                | 117                                                                               | 39   | 41                                                                                | 144                                                                               | 31   | 31   | 91                                                                                  | 23   | 22   | 124                                                                                 | 33   |
| Peak Hour Factor    | 0.79                                                                              | 0.79                                                                              | 0.79 | 0.79                                                                              | 0.79                                                                              | 0.79 | 0.79 | 0.79                                                                                | 0.79 | 0.79 | 0.79                                                                                | 0.79 |
| Heavy Vehicles, %   | 3                                                                                 | 3                                                                                 | 3    | 3                                                                                 | 3                                                                                 | 3    | 3    | 3                                                                                   | 3    | 3    | 3                                                                                   | 3    |
| Mvmt Flow           | 104                                                                               | 148                                                                               | 49   | 52                                                                                | 182                                                                               | 39   | 39   | 115                                                                                 | 29   | 28   | 157                                                                                 | 42   |
| Number of Lanes     | 1                                                                                 | 1                                                                                 | 0    | 1                                                                                 | 1                                                                                 | 0    | 0    | 1                                                                                   | 0    | 0    | 1                                                                                   | 0    |

| Approach                   | EB   | WB   | NB   | SB   |
|----------------------------|------|------|------|------|
| Opposing Approach          | WB   | EB   | SB   | NB   |
| Opposing Lanes             | 2    | 2    | 1    | 1    |
| Conflicting Approach Left  | SB   | NB   | EB   | WB   |
| Conflicting Lanes Left     | 1    | 1    | 2    | 2    |
| Conflicting Approach Right | NB   | SB   | WB   | EB   |
| Conflicting Lanes Right    | 1    | 1    | 2    | 2    |
| HCM Control Delay          | 11.6 | 12.2 | 11.6 | 12.3 |
| HCM LOS                    | B    | B    | B    | B    |

| Lane                   | NBLn1 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | SBLn1 |
|------------------------|-------|-------|-------|-------|-------|-------|
| Vol Left, %            | 21%   | 100%  | 0%    | 100%  | 0%    | 12%   |
| Vol Thru, %            | 63%   | 0%    | 75%   | 0%    | 82%   | 69%   |
| Vol Right, %           | 16%   | 0%    | 25%   | 0%    | 18%   | 18%   |
| Sign Control           | Stop  | Stop  | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 145   | 82    | 156   | 41    | 175   | 179   |
| LT Vol                 | 31    | 82    | 0     | 41    | 0     | 22    |
| Through Vol            | 91    | 0     | 117   | 0     | 144   | 124   |
| RT Vol                 | 23    | 0     | 39    | 0     | 31    | 33    |
| Lane Flow Rate         | 184   | 104   | 197   | 52    | 222   | 227   |
| Geometry Grp           | 2     | 7     | 7     | 7     | 7     | 2     |
| Degree of Util (X)     | 0.304 | 0.194 | 0.332 | 0.098 | 0.378 | 0.367 |
| Departure Headway (Hd) | 5.954 | 6.735 | 6.048 | 6.774 | 6.139 | 5.832 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 600   | 531   | 592   | 527   | 583   | 614   |
| Service Time           | 4.025 | 4.499 | 3.811 | 4.539 | 3.904 | 3.9   |
| HCM Lane V/C Ratio     | 0.307 | 0.196 | 0.333 | 0.099 | 0.381 | 0.37  |
| HCM Control Delay      | 11.6  | 11.1  | 11.8  | 10.3  | 12.6  | 12.3  |
| HCM Lane LOS           | B     | B     | B     | B     | B     | B     |
| HCM 95th-tile Q        | 1.3   | 0.7   | 1.4   | 0.3   | 1.8   | 1.7   |

HCM 6th TWSC  
1: 12th Avenue & Glendale Avenue

10/31/2020

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 16.2 |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      |      |      |      |      |      |      |      |      |      |      |      |
| Traffic Vol, veh/h       | 0    | 0    | 165  | 0    | 0    | 243  | 0    | 1702 | 94   | 49   | 1890 | 161  |
| Future Vol, veh/h        | 0    | 0    | 165  | 0    | 0    | 243  | 0    | 1702 | 94   | 49   | 1890 | 161  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | 0    | -    | -    | 0    | -    | -    | -    | 125  | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    |
| Mvmt Flow                | 0    | 0    | 179  | 0    | 0    | 264  | 0    | 1850 | 102  | 53   | 2054 | 175  |

| Major/Minor          | Minor2 |   | Minor1 |   | Major1 |       | Major2 |      |
|----------------------|--------|---|--------|---|--------|-------|--------|------|
| Conflicting Flow All | -      | - | 1115   | - | -      | 976   | -      | 0    |
| Stage 1              | -      | - | -      | - | -      | -     | -      | -    |
| Stage 2              | -      | - | -      | - | -      | -     | -      | -    |
| Critical Hdwy        | -      | - | 7.16   | - | -      | 7.16  | -      | 5.36 |
| Critical Hdwy Stg 1  | -      | - | -      | - | -      | -     | -      | -    |
| Critical Hdwy Stg 2  | -      | - | -      | - | -      | -     | -      | -    |
| Follow-up Hdwy       | -      | - | 3.93   | - | -      | 3.93  | -      | 3.13 |
| Pot Cap-1 Maneuver   | 0      | 0 | ~ 172  | 0 | 0      | ~ 214 | 0      | 131  |
| Stage 1              | 0      | 0 | -      | 0 | 0      | -     | -      | -    |
| Stage 2              | 0      | 0 | -      | 0 | 0      | -     | -      | -    |
| Platoon blocked, %   | -      | - | -      | - | -      | -     | -      | -    |
| Mov Cap-1 Maneuver   | -      | - | ~ 172  | - | -      | ~ 214 | -      | 131  |
| Mov Cap-2 Maneuver   | -      | - | -      | - | -      | -     | -      | -    |
| Stage 1              | -      | - | -      | - | -      | -     | -      | -    |
| Stage 2              | -      | - | -      | - | -      | -     | -      | -    |

| Approach             | EB    | WB    | NB | SB  |
|----------------------|-------|-------|----|-----|
| HCM Control Delay, s | 135.1 | 184.6 | 0  | 1.2 |
| HCM LOS              | F     | F     |    |     |

| Minor Lane/Major Mvmt | NBT | NBR | EBLn1WBLn1  | SBL   | SBT | SBR |
|-----------------------|-----|-----|-------------|-------|-----|-----|
| Capacity (veh/h)      | -   | -   | 172 214     | 131   | -   | -   |
| HCM Lane V/C Ratio    | -   | -   | 1.043 1.234 | 0.407 | -   | -   |
| HCM Control Delay (s) | -   | -   | 135.1 184.6 | 50.1  | -   | -   |
| HCM Lane LOS          | -   | -   | F F         | F     | -   | -   |
| HCM 95th %tile Q(veh) | -   | -   | 8.7 13.6    | 1.7   | -   | -   |

| Notes                      |                        |                            |                                |
|----------------------------|------------------------|----------------------------|--------------------------------|
| ~: Volume exceeds capacity | \$: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

HCM 6th TWSC  
6: Campus Dr & 6th Street

10/31/2020

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 3.8  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 12   | 8    | 0    | 0    | 4    | 69   | 0    | 146  | 0    | 61   | 79   | 14   |
| Future Vol, veh/h        | 12   | 8    | 0    | 0    | 4    | 69   | 0    | 146  | 0    | 61   | 79   | 14   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 78   | 78   | 78   | 78   | 78   | 78   | 78   | 78   | 78   | 78   | 78   | 78   |
| Heavy Vehicles, %        | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    |
| Mvmt Flow                | 15   | 10   | 0    | 0    | 5    | 88   | 0    | 187  | 0    | 78   | 101  | 18   |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       | Major2 |   |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|--------|---|---|-------|---|---|
| Conflicting Flow All | 500    | 453   | 110    | 458   | 462    | 187   | 119    | 0 | 0 | 187   | 0 | 0 |
| Stage 1              | 266    | 266   | -      | 187   | 187    | -     | -      | - | - | -     | - | - |
| Stage 2              | 234    | 187   | -      | 271   | 275    | -     | -      | - | - | -     | - | - |
| Critical Hdwy        | 7.13   | 6.53  | 6.23   | 7.13  | 6.53   | 6.23  | 4.13   | - | - | 4.13  | - | - |
| Critical Hdwy Stg 1  | 6.13   | 5.53  | -      | 6.13  | 5.53   | -     | -      | - | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.13   | 5.53  | -      | 6.13  | 5.53   | -     | -      | - | - | -     | - | - |
| Follow-up Hdwy       | 3.527  | 4.027 | 3.327  | 3.527 | 4.027  | 3.327 | 2.227  | - | - | 2.227 | - | - |
| Pot Cap-1 Maneuver   | 480    | 501   | 941    | 511   | 495    | 852   | 1463   | - | - | 1381  | - | - |
| Stage 1              | 737    | 687   | -      | 812   | 743    | -     | -      | - | - | -     | - | - |
| Stage 2              | 767    | 743   | -      | 733   | 681    | -     | -      | - | - | -     | - | - |
| Platoon blocked, %   |        |       |        |       |        |       |        | - | - | -     | - | - |
| Mov Cap-1 Maneuver   | 407    | 470   | 941    | 479   | 465    | 852   | 1463   | - | - | 1381  | - | - |
| Mov Cap-2 Maneuver   | 407    | 470   | -      | 479   | 465    | -     | -      | - | - | -     | - | - |
| Stage 1              | 737    | 645   | -      | 812   | 743    | -     | -      | - | - | -     | - | - |
| Stage 2              | 683    | 743   | -      | 677   | 639    | -     | -      | - | - | -     | - | - |

| Approach             | EB   |  | WB |  | NB |  | SB  |  |
|----------------------|------|--|----|--|----|--|-----|--|
| HCM Control Delay, s | 13.9 |  | 10 |  | 0  |  | 3.1 |  |
| HCM LOS              | B    |  | B  |  |    |  |     |  |

| Minor Lane/Major Mvmt | NBL  | NBT | NBR | EBLn1WBLn1 | SBL   | SBT | SBR |
|-----------------------|------|-----|-----|------------|-------|-----|-----|
| Capacity (veh/h)      | 1463 | -   | -   | 430 815    | 1381  | -   | -   |
| HCM Lane V/C Ratio    | -    | -   | -   | 0.06 0.115 | 0.057 | -   | -   |
| HCM Control Delay (s) | 0    | -   | -   | 13.9 10    | 7.8   | 0   | -   |
| HCM Lane LOS          | A    | -   | -   | B B        | A A   | -   | -   |
| HCM 95th %tile Q(veh) | 0    | -   | -   | 0.2 0.4    | 0.2   | -   | -   |

| Intersection             |        |      |        |            |        |       |        |      |      |      |      |      |
|--------------------------|--------|------|--------|------------|--------|-------|--------|------|------|------|------|------|
| Int Delay, s/veh         | 2.3    |      |        |            |        |       |        |      |      |      |      |      |
| Movement                 | EBL    | EBT  | EBR    | WBL        | WBT    | WBR   | NBL    | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |        |      | ↗      |            |        | ↗     | ↗      | ↕↗   |      | ↗    | ↕↗   |      |
| Traffic Vol, veh/h       | 0      | 0    | 68     | 0          | 0      | 161   | 98     | 1070 | 105  | 107  | 1112 | 8    |
| Future Vol, veh/h        | 0      | 0    | 68     | 0          | 0      | 161   | 98     | 1070 | 105  | 107  | 1112 | 8    |
| Conflicting Peds, #/hr   | 0      | 0    | 0      | 0          | 0      | 0     | 0      | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop   | Stop | Stop   | Stop       | Stop   | Stop  | Free   | Free | Free | Free | Free | Free |
| RT Channelized           | -      | -    | None   | -          | -      | None  | -      | -    | None | -    | -    | None |
| Storage Length           | -      | -    | 0      | -          | -      | 0     | 75     | -    | -    | 125  | -    | -    |
| Veh in Median Storage, # | -      | 0    | -      | -          | 0      | -     | -      | 0    | -    | -    | 0    | -    |
| Grade, %                 | -      | 0    | -      | -          | 0      | -     | -      | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 97     | 97   | 97     | 97         | 97     | 97    | 97     | 97   | 97   | 97   | 97   | 97   |
| Heavy Vehicles, %        | 3      | 3    | 3      | 3          | 3      | 3     | 3      | 3    | 3    | 3    | 3    | 3    |
| Mvmt Flow                | 0      | 0    | 70     | 0          | 0      | 166   | 101    | 1103 | 108  | 110  | 1146 | 8    |
|                          |        |      |        |            |        |       |        |      |      |      |      |      |
| Major/Minor              | Minor2 |      | Minor1 |            | Major1 |       | Major2 |      |      |      |      |      |
| Conflicting Flow All     | -      | -    | 577    | -          | -      | 606   | 1154   | 0    | 0    | 1211 | 0    | 0    |
| Stage 1                  | -      | -    | -      | -          | -      | -     | -      | -    | -    | -    | -    | -    |
| Stage 2                  | -      | -    | -      | -          | -      | -     | -      | -    | -    | -    | -    | -    |
| Critical Hdwy            | -      | -    | 6.96   | -          | -      | 6.96  | 4.16   | -    | -    | 4.16 | -    | -    |
| Critical Hdwy Stg 1      | -      | -    | -      | -          | -      | -     | -      | -    | -    | -    | -    | -    |
| Critical Hdwy Stg 2      | -      | -    | -      | -          | -      | -     | -      | -    | -    | -    | -    | -    |
| Follow-up Hdwy           | -      | -    | 3.33   | -          | -      | 3.33  | 2.23   | -    | -    | 2.23 | -    | -    |
| Pot Cap-1 Maneuver       | 0      | 0    | 457    | 0          | 0      | 438   | 595    | -    | -    | 566  | -    | -    |
| Stage 1                  | 0      | 0    | -      | 0          | 0      | -     | -      | -    | -    | -    | -    | -    |
| Stage 2                  | 0      | 0    | -      | 0          | 0      | -     | -      | -    | -    | -    | -    | -    |
| Platoon blocked, %       |        |      |        |            |        |       |        | -    | -    |      | -    | -    |
| Mov Cap-1 Maneuver       | -      | -    | 457    | -          | -      | 438   | 595    | -    | -    | 566  | -    | -    |
| Mov Cap-2 Maneuver       | -      | -    | -      | -          | -      | -     | -      | -    | -    | -    | -    | -    |
| Stage 1                  | -      | -    | -      | -          | -      | -     | -      | -    | -    | -    | -    | -    |
| Stage 2                  | -      | -    | -      | -          | -      | -     | -      | -    | -    | -    | -    | -    |
|                          |        |      |        |            |        |       |        |      |      |      |      |      |
|                          |        |      |        |            |        |       |        |      |      |      |      |      |
| Approach                 | EB     |      | WB     |            | NB     |       | SB     |      |      |      |      |      |
| HCM Control Delay, s     | 14.3   |      | 18.1   |            | 0.9    |       | 1.1    |      |      |      |      |      |
| HCM LOS                  | B      |      | C      |            |        |       |        |      |      |      |      |      |
|                          |        |      |        |            |        |       |        |      |      |      |      |      |
| Minor Lane/Major Mvmt    | NBL    | NBT  | NBR    | EBLn1WBLn1 | SBL    | SBT   | SBR    |      |      |      |      |      |
| Capacity (veh/h)         | 595    | -    | -      | 457        | 438    | 566   | -      | -    |      |      |      |      |
| HCM Lane V/C Ratio       | 0.17   | -    | -      | 0.153      | 0.379  | 0.195 | -      | -    |      |      |      |      |
| HCM Control Delay (s)    | 12.3   | -    | -      | 14.3       | 18.1   | 12.9  | -      | -    |      |      |      |      |
| HCM Lane LOS             | B      | -    | -      | B          | C      | B     | -      | -    |      |      |      |      |
| HCM 95th %tile Q(veh)    | 0.6    | -    | -      | 0.5        | 1.7    | 0.7   | -      | -    |      |      |      |      |

# HCM 6th Signalized Intersection Summary

## 2: SR 198 WB Ramps & 12th Avenue

10/31/2020

|                              |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | WBL                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                                 | SBR                                                                                 | NEL                                                                                 | NER                                                                                 |
| Lane Configurations          |  |  |  |  |                                                                                   |                                                                                   |  |  |                                                                                     |                                                                                     |
| Traffic Volume (veh/h)       | 143                                                                               | 553                                                                               | 46                                                                                | 1247                                                                              | 0                                                                                 | 0                                                                                 | 1331                                                                                | 729                                                                                 | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 143                                                                               | 553                                                                               | 46                                                                                | 1247                                                                              | 0                                                                                 | 0                                                                                 | 1331                                                                                | 729                                                                                 | 0                                                                                   | 0                                                                                   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 0                                                                                 | 0                                                                                 | 1856                                                                                | 1856                                                                                |                                                                                     |                                                                                     |
| Adj Flow Rate, veh/h         | 155                                                                               | 601                                                                               | 50                                                                                | 1355                                                                              | 0                                                                                 | 0                                                                                 | 1447                                                                                | 792                                                                                 |                                                                                     |                                                                                     |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                |                                                                                     |                                                                                     |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 3                                                                                   | 3                                                                                   |                                                                                     |                                                                                     |
| Cap, veh/h                   | 393                                                                               | 699                                                                               | 71                                                                                | 2376                                                                              | 0                                                                                 | 0                                                                                 | 2051                                                                                | 915                                                                                 |                                                                                     |                                                                                     |
| Arrive On Green              | 0.22                                                                              | 0.22                                                                              | 0.04                                                                              | 0.67                                                                              | 0.00                                                                              | 0.00                                                                              | 0.58                                                                                | 0.58                                                                                |                                                                                     |                                                                                     |
| Sat Flow, veh/h              | 1767                                                                              | 3145                                                                              | 1767                                                                              | 3618                                                                              | 0                                                                                 | 0                                                                                 | 3618                                                                                | 1572                                                                                |                                                                                     |                                                                                     |
| Grp Volume(v), veh/h         | 155                                                                               | 601                                                                               | 50                                                                                | 1355                                                                              | 0                                                                                 | 0                                                                                 | 1447                                                                                | 792                                                                                 |                                                                                     |                                                                                     |
| Grp Sat Flow(s),veh/h/ln     | 1767                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 0                                                                                 | 0                                                                                 | 1763                                                                                | 1572                                                                                |                                                                                     |                                                                                     |
| Q Serve(g_s), s              | 6.5                                                                               | 15.9                                                                              | 2.4                                                                               | 17.7                                                                              | 0.0                                                                               | 0.0                                                                               | 25.3                                                                                | 36.8                                                                                |                                                                                     |                                                                                     |
| Cycle Q Clear(g_c), s        | 6.5                                                                               | 15.9                                                                              | 2.4                                                                               | 17.7                                                                              | 0.0                                                                               | 0.0                                                                               | 25.3                                                                                | 36.8                                                                                |                                                                                     |                                                                                     |
| Prop In Lane                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 0.00                                                                              |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |
| Lane Grp Cap(c), veh/h       | 393                                                                               | 699                                                                               | 71                                                                                | 2376                                                                              | 0                                                                                 | 0                                                                                 | 2051                                                                                | 915                                                                                 |                                                                                     |                                                                                     |
| V/C Ratio(X)                 | 0.39                                                                              | 0.86                                                                              | 0.70                                                                              | 0.57                                                                              | 0.00                                                                              | 0.00                                                                              | 0.71                                                                                | 0.87                                                                                |                                                                                     |                                                                                     |
| Avail Cap(c_a), veh/h        | 458                                                                               | 815                                                                               | 112                                                                               | 2376                                                                              | 0                                                                                 | 0                                                                                 | 2051                                                                                | 915                                                                                 |                                                                                     |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Uniform Delay (d), s/veh     | 28.8                                                                              | 32.4                                                                              | 41.1                                                                              | 7.5                                                                               | 0.0                                                                               | 0.0                                                                               | 12.9                                                                                | 15.3                                                                                |                                                                                     |                                                                                     |
| Incr Delay (d2), s/veh       | 0.6                                                                               | 8.2                                                                               | 11.8                                                                              | 1.0                                                                               | 0.0                                                                               | 0.0                                                                               | 2.1                                                                                 | 10.8                                                                                |                                                                                     |                                                                                     |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |
| %ile BackOfQ(50%),veh/ln     | 2.6                                                                               | 6.4                                                                               | 1.3                                                                               | 5.3                                                                               | 0.0                                                                               | 0.0                                                                               | 8.9                                                                                 | 13.5                                                                                |                                                                                     |                                                                                     |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 29.4                                                                              | 40.6                                                                              | 52.9                                                                              | 8.5                                                                               | 0.0                                                                               | 0.0                                                                               | 14.9                                                                                | 26.1                                                                                |                                                                                     |                                                                                     |
| LnGrp LOS                    | C                                                                                 | D                                                                                 | D                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 | B                                                                                   | C                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          | 756                                                                               |                                                                                   |                                                                                   | 1405                                                                              |                                                                                   |                                                                                   | 2239                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 38.3                                                                              |                                                                                   |                                                                                   | 10.1                                                                              |                                                                                   |                                                                                   | 18.9                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | D                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 2                                                                                 |                                                                                   | 5                                                                                 |                                                                                   | 6                                                                                 |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 63.0                                                                              |                                                                                   | 8.0                                                                               |                                                                                   | 55.0                                                                              |                                                                                   | 23.8                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 58.5                                                                              |                                                                                   | 5.5                                                                               |                                                                                   | 48.5                                                                              |                                                                                   | 22.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 19.7                                                                              |                                                                                   | 4.4                                                                               |                                                                                   | 38.8                                                                              |                                                                                   | 17.9                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 12.9                                                                              |                                                                                   | 0.0                                                                               |                                                                                   | 7.7                                                                               |                                                                                   | 1.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 19.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# HCM 6th Signalized Intersection Summary 3: 12th Avenue & SR 198 EB Off Ramps

10/31/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |  |  |                                                                                     |  |  |
| Traffic Volume (veh/h)       | 610                                                                               | 0                                                                                 | 49                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 673                                                                                 | 143                                                                                 | 0                                                                                   | 905                                                                                 | 578                                                                                 |
| Future Volume (veh/h)        | 610                                                                               | 0                                                                                 | 49                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 673                                                                                 | 143                                                                                 | 0                                                                                   | 905                                                                                 | 578                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 0                                                                                 | 1856                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1856                                                                                | 1856                                                                                | 0                                                                                   | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 656                                                                               | 0                                                                                 | 53                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 724                                                                                 | 0                                                                                   | 0                                                                                   | 973                                                                                 | 0                                                                                   |
| Peak Hour Factor             | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 0                                                                                 | 3                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 3                                                                                   | 3                                                                                   | 0                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 808                                                                               | 0                                                                                 | 371                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2287                                                                                |                                                                                     | 0                                                                                   | 2287                                                                                |                                                                                     |
| Arrive On Green              | 0.24                                                                              | 0.00                                                                              | 0.24                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 0.65                                                                                | 0.00                                                                                | 0.00                                                                                | 0.65                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 3428                                                                              | 0                                                                                 | 1572                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 3618                                                                                | 1572                                                                                | 0                                                                                   | 3618                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 656                                                                               | 0                                                                                 | 53                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 724                                                                                 | 0                                                                                   | 0                                                                                   | 973                                                                                 | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1714                                                                              | 0                                                                                 | 1572                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1763                                                                                | 1572                                                                                | 0                                                                                   | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 14.1                                                                              | 0.0                                                                               | 2.1                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 7.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 10.4                                                                                | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 14.1                                                                              | 0.0                                                                               | 2.1                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 7.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 10.4                                                                                | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                |                                                                                     | 1.00                                                                                | 0.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 808                                                                               | 0                                                                                 | 371                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2287                                                                                |                                                                                     | 0                                                                                   | 2287                                                                                |                                                                                     |
| V/C Ratio(X)                 | 0.81                                                                              | 0.00                                                                              | 0.14                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 0.32                                                                                |                                                                                     | 0.00                                                                                | 0.43                                                                                |                                                                                     |
| Avail Cap(c_a), veh/h        | 1343                                                                              | 0                                                                                 | 616                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2287                                                                                |                                                                                     | 0                                                                                   | 2287                                                                                |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 28.1                                                                              | 0.0                                                                               | 23.5                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 6.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 6.6                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 2.0                                                                               | 0.0                                                                               | 0.2                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 0.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.6                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 5.5                                                                               | 0.0                                                                               | 0.7                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 2.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 3.0                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 30.1                                                                              | 0.0                                                                               | 23.7                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 6.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 7.2                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | A                                                                                   | A                                                                                   |                                                                                     | A                                                                                   | A                                                                                   |                                                                                     |
| Approach Vol, veh/h          | 709                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 724                                                                                 |                                                                                     |                                                                                     | 973                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 29.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6.4                                                                                 |                                                                                     |                                                                                     | 7.2                                                                                 |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 55.0                                                                              |                                                                                   |                                                                                   | 22.9                                                                              |                                                                                   |                                                                                   | 55.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               |                                                                                   |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                   | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 50.5                                                                              |                                                                                   |                                                                                   | 30.5                                                                              |                                                                                   |                                                                                   | 50.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 9.1                                                                               |                                                                                   |                                                                                   | 16.1                                                                              |                                                                                   |                                                                                   | 12.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 5.4                                                                               |                                                                                   |                                                                                   | 2.3                                                                               |                                                                                   |                                                                                   | 7.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 13.6                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 4: Campus Drive & Lacey Boulevard

10/31/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 30                                                                                | 740                                                                               | 59                                                                                | 78                                                                                | 820                                                                               | 43                                                                                | 84                                                                                  | 68                                                                                  | 166                                                                                 | 100                                                                                 | 86                                                                                  | 34                                                                                  |
| Future Volume (veh/h)        | 30                                                                                | 740                                                                               | 59                                                                                | 78                                                                                | 820                                                                               | 43                                                                                | 84                                                                                  | 68                                                                                  | 166                                                                                 | 100                                                                                 | 86                                                                                  | 34                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 34                                                                                | 851                                                                               | 68                                                                                | 90                                                                                | 943                                                                               | 49                                                                                | 97                                                                                  | 78                                                                                  | 191                                                                                 | 115                                                                                 | 99                                                                                  | 39                                                                                  |
| Peak Hour Factor             | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                                | 0.87                                                                                | 0.87                                                                                | 0.87                                                                                | 0.87                                                                                | 0.87                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 59                                                                                | 1045                                                                              | 466                                                                               | 116                                                                               | 1158                                                                              | 517                                                                               | 125                                                                                 | 155                                                                                 | 380                                                                                 | 147                                                                                 | 627                                                                                 | 531                                                                                 |
| Arrive On Green              | 0.03                                                                              | 0.30                                                                              | 0.30                                                                              | 0.07                                                                              | 0.33                                                                              | 0.33                                                                              | 0.07                                                                                | 0.33                                                                                | 0.33                                                                                | 0.08                                                                                | 0.34                                                                                | 0.34                                                                                |
| Sat Flow, veh/h              | 1767                                                                              | 3526                                                                              | 1572                                                                              | 1767                                                                              | 3526                                                                              | 1572                                                                              | 1767                                                                                | 477                                                                                 | 1168                                                                                | 1767                                                                                | 1856                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 34                                                                                | 851                                                                               | 68                                                                                | 90                                                                                | 943                                                                               | 49                                                                                | 97                                                                                  | 0                                                                                   | 269                                                                                 | 115                                                                                 | 99                                                                                  | 39                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1767                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                                | 0                                                                                   | 1645                                                                                | 1767                                                                                | 1856                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 1.5                                                                               | 17.5                                                                              | 2.5                                                                               | 3.9                                                                               | 19.2                                                                              | 1.7                                                                               | 4.2                                                                                 | 0.0                                                                                 | 10.3                                                                                | 5.0                                                                                 | 2.9                                                                                 | 1.3                                                                                 |
| Cycle Q Clear(g_c), s        | 1.5                                                                               | 17.5                                                                              | 2.5                                                                               | 3.9                                                                               | 19.2                                                                              | 1.7                                                                               | 4.2                                                                                 | 0.0                                                                                 | 10.3                                                                                | 5.0                                                                                 | 2.9                                                                                 | 1.3                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 0.71                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 59                                                                                | 1045                                                                              | 466                                                                               | 116                                                                               | 1158                                                                              | 517                                                                               | 125                                                                                 | 0                                                                                   | 535                                                                                 | 147                                                                                 | 627                                                                                 | 531                                                                                 |
| V/C Ratio(X)                 | 0.58                                                                              | 0.81                                                                              | 0.15                                                                              | 0.78                                                                              | 0.81                                                                              | 0.09                                                                              | 0.78                                                                                | 0.00                                                                                | 0.50                                                                                | 0.78                                                                                | 0.16                                                                                | 0.07                                                                                |
| Avail Cap(c_a), veh/h        | 113                                                                               | 1237                                                                              | 552                                                                               | 192                                                                               | 1395                                                                              | 622                                                                               | 237                                                                                 | 0                                                                                   | 535                                                                                 | 237                                                                                 | 627                                                                                 | 531                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 37.3                                                                              | 25.6                                                                              | 20.3                                                                              | 36.1                                                                              | 24.1                                                                              | 18.2                                                                              | 35.8                                                                                | 0.0                                                                                 | 21.3                                                                                | 35.2                                                                                | 18.1                                                                                | 17.6                                                                                |
| Incr Delay (d2), s/veh       | 8.6                                                                               | 3.7                                                                               | 0.1                                                                               | 10.7                                                                              | 3.2                                                                               | 0.1                                                                               | 9.9                                                                                 | 0.0                                                                                 | 3.3                                                                                 | 8.9                                                                                 | 0.5                                                                                 | 0.3                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.8                                                                               | 7.4                                                                               | 0.9                                                                               | 2.0                                                                               | 7.9                                                                               | 0.6                                                                               | 2.1                                                                                 | 0.0                                                                                 | 4.3                                                                                 | 2.5                                                                                 | 1.3                                                                                 | 0.5                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 45.9                                                                              | 29.3                                                                              | 20.4                                                                              | 46.7                                                                              | 27.3                                                                              | 18.3                                                                              | 45.7                                                                                | 0.0                                                                                 | 24.7                                                                                | 44.1                                                                                | 18.7                                                                                | 17.9                                                                                |
| LnGrp LOS                    | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 | B                                                                                 | D                                                                                   | A                                                                                   | C                                                                                   | D                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 953                                                                               |                                                                                   |                                                                                   | 1082                                                                              |                                                                                   |                                                                                   | 366                                                                                 |                                                                                     |                                                                                     | 253                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 29.2                                                                              |                                                                                   |                                                                                   | 28.5                                                                              |                                                                                   |                                                                                   | 30.2                                                                                |                                                                                     |                                                                                     | 30.1                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 11.0                                                                              | 30.0                                                                              | 9.6                                                                               | 27.7                                                                              | 10.0                                                                              | 31.0                                                                              | 7.1                                                                                 | 30.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 10.5                                                                              | 25.5                                                                              | 8.5                                                                               | 27.5                                                                              | 10.5                                                                              | 25.5                                                                              | 5.0                                                                                 | 31.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 7.0                                                                               | 12.3                                                                              | 5.9                                                                               | 19.5                                                                              | 6.2                                                                               | 4.9                                                                               | 3.5                                                                                 | 21.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 1.3                                                                               | 0.0                                                                               | 3.6                                                                               | 0.1                                                                               | 0.6                                                                               | 0.0                                                                                 | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 29.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 7: 11th Avenue & Lacey Boulevard

10/31/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |   |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)       | 253                                                                               | 292                                                                               | 213                                                                               | 110                                                                               | 317                                                                               | 85                                                                                | 306                                                                                 | 680                                                                                 | 57                                                                                  | 92                                                                                  | 578                                                                                 | 105                                                                                 |
| Future Volume (veh/h)        | 253                                                                               | 292                                                                               | 213                                                                               | 110                                                                               | 317                                                                               | 85                                                                                | 306                                                                                 | 680                                                                                 | 57                                                                                  | 92                                                                                  | 578                                                                                 | 105                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 278                                                                               | 321                                                                               | 234                                                                               | 121                                                                               | 348                                                                               | 93                                                                                | 336                                                                                 | 747                                                                                 | 63                                                                                  | 101                                                                                 | 635                                                                                 | 115                                                                                 |
| Peak Hour Factor             | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 361                                                                               | 701                                                                               | 313                                                                               | 154                                                                               | 498                                                                               | 131                                                                               | 420                                                                                 | 1322                                                                                | 111                                                                                 | 129                                                                                 | 1243                                                                                | 554                                                                                 |
| Arrive On Green              | 0.11                                                                              | 0.20                                                                              | 0.20                                                                              | 0.09                                                                              | 0.18                                                                              | 0.18                                                                              | 0.12                                                                                | 0.40                                                                                | 0.40                                                                                | 0.07                                                                                | 0.35                                                                                | 0.35                                                                                |
| Sat Flow, veh/h              | 3428                                                                              | 3526                                                                              | 1572                                                                              | 1767                                                                              | 2760                                                                              | 728                                                                               | 3428                                                                                | 3291                                                                                | 277                                                                                 | 1767                                                                                | 3526                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 278                                                                               | 321                                                                               | 234                                                                               | 121                                                                               | 221                                                                               | 220                                                                               | 336                                                                                 | 400                                                                                 | 410                                                                                 | 101                                                                                 | 635                                                                                 | 115                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1714                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 1725                                                                              | 1714                                                                                | 1763                                                                                | 1806                                                                                | 1767                                                                                | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 5.9                                                                               | 6.0                                                                               | 10.5                                                                              | 5.0                                                                               | 8.8                                                                               | 9.0                                                                               | 7.2                                                                                 | 13.2                                                                                | 13.2                                                                                | 4.2                                                                                 | 10.7                                                                                | 2.5                                                                                 |
| Cycle Q Clear(g_c), s        | 5.9                                                                               | 6.0                                                                               | 10.5                                                                              | 5.0                                                                               | 8.8                                                                               | 9.0                                                                               | 7.2                                                                                 | 13.2                                                                                | 13.2                                                                                | 4.2                                                                                 | 10.7                                                                                | 2.5                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.42                                                                              | 1.00                                                                                |                                                                                     | 0.15                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 361                                                                               | 701                                                                               | 313                                                                               | 154                                                                               | 318                                                                               | 311                                                                               | 420                                                                                 | 708                                                                                 | 725                                                                                 | 129                                                                                 | 1243                                                                                | 554                                                                                 |
| V/C Ratio(X)                 | 0.77                                                                              | 0.46                                                                              | 0.75                                                                              | 0.79                                                                              | 0.69                                                                              | 0.71                                                                              | 0.80                                                                                | 0.56                                                                                | 0.57                                                                                | 0.78                                                                                | 0.51                                                                                | 0.21                                                                                |
| Avail Cap(c_a), veh/h        | 365                                                                               | 1252                                                                              | 558                                                                               | 219                                                                               | 656                                                                               | 642                                                                               | 433                                                                                 | 708                                                                                 | 725                                                                                 | 200                                                                                 | 1243                                                                                | 554                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 32.7                                                                              | 26.6                                                                              | 28.4                                                                              | 33.6                                                                              | 28.9                                                                              | 29.0                                                                              | 32.1                                                                                | 17.4                                                                                | 17.4                                                                                | 34.2                                                                                | 19.2                                                                                | 7.2                                                                                 |
| Incr Delay (d2), s/veh       | 9.6                                                                               | 0.5                                                                               | 3.6                                                                               | 11.6                                                                              | 2.7                                                                               | 3.0                                                                               | 10.0                                                                                | 3.2                                                                                 | 3.2                                                                                 | 10.1                                                                                | 1.5                                                                                 | 0.8                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 2.8                                                                               | 2.5                                                                               | 4.1                                                                               | 2.6                                                                               | 3.8                                                                               | 3.8                                                                               | 3.4                                                                                 | 5.5                                                                                 | 5.6                                                                                 | 2.1                                                                                 | 4.3                                                                                 | 1.4                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 42.3                                                                              | 27.0                                                                              | 31.9                                                                              | 45.3                                                                              | 31.6                                                                              | 31.9                                                                              | 42.1                                                                                | 20.7                                                                                | 20.6                                                                                | 44.3                                                                                | 20.7                                                                                | 8.1                                                                                 |
| LnGrp LOS                    | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                   | C                                                                                   | C                                                                                   | D                                                                                   | C                                                                                   | A                                                                                   |
| Approach Vol, veh/h          | 833                                                                               |                                                                                   |                                                                                   | 562                                                                               |                                                                                   |                                                                                   | 1146                                                                                |                                                                                     |                                                                                     | 851                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 33.5                                                                              |                                                                                   |                                                                                   | 34.7                                                                              |                                                                                   |                                                                                   | 26.9                                                                                |                                                                                     |                                                                                     | 21.8                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 10.0                                                                              | 34.7                                                                              | 11.0                                                                              | 19.4                                                                              | 13.7                                                                              | 31.0                                                                              | 12.4                                                                                | 18.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 8.5                                                                               | 27.5                                                                              | 9.3                                                                               | 26.7                                                                              | 9.5                                                                               | 26.5                                                                              | 8.0                                                                                 | 28.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 6.2                                                                               | 15.2                                                                              | 7.0                                                                               | 12.5                                                                              | 9.2                                                                               | 12.7                                                                              | 7.9                                                                                 | 11.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 4.0                                                                               | 0.1                                                                               | 2.4                                                                               | 0.0                                                                               | 3.9                                                                               | 0.0                                                                                 | 2.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 28.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 8: 11th Avenue & 7th Street

10/31/2020

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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 67                                                                                | 200                                                                               | 219                                                                               | 163                                                                               | 175                                                                               | 109                                                                               | 167                                                                                 | 631                                                                                 | 115                                                                                 | 111                                                                                 | 578                                                                                 | 52                                                                                  |
| Future Volume (veh/h)        | 67                                                                                | 200                                                                               | 219                                                                               | 163                                                                               | 175                                                                               | 109                                                                               | 167                                                                                 | 631                                                                                 | 115                                                                                 | 111                                                                                 | 578                                                                                 | 52                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 74                                                                                | 220                                                                               | 241                                                                               | 179                                                                               | 192                                                                               | 120                                                                               | 184                                                                                 | 693                                                                                 | 126                                                                                 | 122                                                                                 | 635                                                                                 | 57                                                                                  |
| Peak Hour Factor             | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 175                                                                               | 351                                                                               | 313                                                                               | 216                                                                               | 574                                                                               | 342                                                                               | 221                                                                                 | 1274                                                                                | 568                                                                                 | 154                                                                                 | 1140                                                                                | 509                                                                                 |
| Arrive On Green              | 0.05                                                                              | 0.20                                                                              | 0.20                                                                              | 0.12                                                                              | 0.27                                                                              | 0.27                                                                              | 0.13                                                                                | 0.36                                                                                | 0.36                                                                                | 0.09                                                                                | 0.32                                                                                | 0.32                                                                                |
| Sat Flow, veh/h              | 3428                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                              | 2125                                                                              | 1266                                                                              | 1767                                                                                | 3526                                                                                | 1572                                                                                | 1767                                                                                | 3526                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 74                                                                                | 220                                                                               | 241                                                                               | 179                                                                               | 158                                                                               | 154                                                                               | 184                                                                                 | 693                                                                                 | 126                                                                                 | 122                                                                                 | 635                                                                                 | 57                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1714                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 1628                                                                              | 1767                                                                                | 1763                                                                                | 1572                                                                                | 1767                                                                                | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 1.6                                                                               | 8.9                                                                               | 11.3                                                                              | 7.7                                                                               | 5.6                                                                               | 6.0                                                                               | 8.0                                                                                 | 12.2                                                                                | 2.7                                                                                 | 5.3                                                                                 | 11.6                                                                                | 2.0                                                                                 |
| Cycle Q Clear(g_c), s        | 1.6                                                                               | 8.9                                                                               | 11.3                                                                              | 7.7                                                                               | 5.6                                                                               | 6.0                                                                               | 8.0                                                                                 | 12.2                                                                                | 2.7                                                                                 | 5.3                                                                                 | 11.6                                                                                | 2.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.78                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 175                                                                               | 351                                                                               | 313                                                                               | 216                                                                               | 476                                                                               | 440                                                                               | 221                                                                                 | 1274                                                                                | 568                                                                                 | 154                                                                                 | 1140                                                                                | 509                                                                                 |
| V/C Ratio(X)                 | 0.42                                                                              | 0.63                                                                              | 0.77                                                                              | 0.83                                                                              | 0.33                                                                              | 0.35                                                                              | 0.83                                                                                | 0.54                                                                                | 0.22                                                                                | 0.79                                                                                | 0.56                                                                                | 0.11                                                                                |
| Avail Cap(c_a), veh/h        | 232                                                                               | 586                                                                               | 523                                                                               | 230                                                                               | 696                                                                               | 643                                                                               | 237                                                                                 | 1274                                                                                | 568                                                                                 | 212                                                                                 | 1140                                                                                | 509                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 36.0                                                                              | 28.7                                                                              | 29.6                                                                              | 33.5                                                                              | 22.9                                                                              | 23.0                                                                              | 33.4                                                                                | 19.9                                                                                | 6.9                                                                                 | 35.0                                                                                | 21.8                                                                                | 18.6                                                                                |
| Incr Delay (d2), s/veh       | 1.6                                                                               | 1.8                                                                               | 4.0                                                                               | 20.7                                                                              | 0.4                                                                               | 0.5                                                                               | 20.5                                                                                | 1.7                                                                                 | 0.9                                                                                 | 12.9                                                                                | 2.0                                                                                 | 0.4                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.7                                                                               | 3.8                                                                               | 4.4                                                                               | 4.5                                                                               | 2.3                                                                               | 2.3                                                                               | 4.5                                                                                 | 4.9                                                                                 | 1.6                                                                                 | 2.7                                                                                 | 4.8                                                                                 | 0.8                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 37.6                                                                              | 30.5                                                                              | 33.6                                                                              | 54.2                                                                              | 23.3                                                                              | 23.5                                                                              | 53.9                                                                                | 21.5                                                                                | 7.8                                                                                 | 47.9                                                                                | 23.8                                                                                | 19.0                                                                                |
| LnGrp LOS                    | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                   | C                                                                                   | A                                                                                   | D                                                                                   | C                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 535                                                                               |                                                                                   |                                                                                   | 491                                                                               |                                                                                   |                                                                                   | 1003                                                                                |                                                                                     |                                                                                     | 814                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 32.9                                                                              |                                                                                   |                                                                                   | 34.6                                                                              |                                                                                   |                                                                                   | 25.7                                                                                |                                                                                     |                                                                                     | 27.1                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 11.3                                                                              | 32.8                                                                              | 14.1                                                                              | 20.1                                                                              | 14.3                                                                              | 29.8                                                                              | 8.5                                                                                 | 25.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 9.4                                                                               | 26.4                                                                              | 10.2                                                                              | 26.0                                                                              | 10.5                                                                              | 25.3                                                                              | 5.3                                                                                 | 30.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 7.3                                                                               | 14.2                                                                              | 9.7                                                                               | 13.3                                                                              | 10.0                                                                              | 13.6                                                                              | 3.6                                                                                 | 8.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 4.0                                                                               | 0.0                                                                               | 2.2                                                                               | 0.0                                                                               | 3.4                                                                               | 0.0                                                                                 | 1.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 29.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 10: 11th Avenue & 5th Street

10/31/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |                                                                                   |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 186                                                                               | 0                                                                                 | 188                                                                               | 10                                                                                | 0                                                                                 | 10                                                                                | 239                                                                                 | 1071                                                                                | 3                                                                                   | 8                                                                                   | 1013                                                                                | 148                                                                                 |
| Future Volume (veh/h)        | 186                                                                               | 0                                                                                 | 188                                                                               | 10                                                                                | 0                                                                                 | 10                                                                                | 239                                                                                 | 1071                                                                                | 3                                                                                   | 8                                                                                   | 1013                                                                                | 148                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 192                                                                               | 0                                                                                 | 194                                                                               | 10                                                                                | 0                                                                                 | 10                                                                                | 246                                                                                 | 1104                                                                                | 3                                                                                   | 8                                                                                   | 1044                                                                                | 153                                                                                 |
| Peak Hour Factor             | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 344                                                                               | 0                                                                                 | 311                                                                               | 130                                                                               | 23                                                                                | 80                                                                                | 292                                                                                 | 2204                                                                                | 6                                                                                   | 18                                                                                  | 1607                                                                                | 717                                                                                 |
| Arrive On Green              | 0.20                                                                              | 0.00                                                                              | 0.20                                                                              | 0.20                                                                              | 0.00                                                                              | 0.20                                                                              | 0.17                                                                                | 0.61                                                                                | 0.61                                                                                | 0.01                                                                                | 0.46                                                                                | 0.46                                                                                |
| Sat Flow, veh/h              | 1394                                                                              | 0                                                                                 | 1572                                                                              | 289                                                                               | 115                                                                               | 404                                                                               | 1767                                                                                | 3607                                                                                | 10                                                                                  | 1767                                                                                | 3526                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 192                                                                               | 0                                                                                 | 194                                                                               | 20                                                                                | 0                                                                                 | 0                                                                                 | 246                                                                                 | 540                                                                                 | 567                                                                                 | 8                                                                                   | 1044                                                                                | 153                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1394                                                                              | 0                                                                                 | 1572                                                                              | 807                                                                               | 0                                                                                 | 0                                                                                 | 1767                                                                                | 1763                                                                                | 1854                                                                                | 1767                                                                                | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 2.8                                                                               | 0.0                                                                               | 8.4                                                                               | 0.1                                                                               | 0.0                                                                               | 0.0                                                                               | 10.1                                                                                | 12.8                                                                                | 12.8                                                                                | 0.3                                                                                 | 17.0                                                                                | 4.4                                                                                 |
| Cycle Q Clear(g_c), s        | 11.3                                                                              | 0.0                                                                               | 8.4                                                                               | 8.5                                                                               | 0.0                                                                               | 0.0                                                                               | 10.1                                                                                | 12.8                                                                                | 12.8                                                                                | 0.3                                                                                 | 17.0                                                                                | 4.4                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 0.50                                                                              |                                                                                   | 0.50                                                                              | 1.00                                                                                |                                                                                     | 0.01                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 344                                                                               | 0                                                                                 | 311                                                                               | 232                                                                               | 0                                                                                 | 0                                                                                 | 292                                                                                 | 1077                                                                                | 1133                                                                                | 18                                                                                  | 1607                                                                                | 717                                                                                 |
| V/C Ratio(X)                 | 0.56                                                                              | 0.00                                                                              | 0.62                                                                              | 0.09                                                                              | 0.00                                                                              | 0.00                                                                              | 0.84                                                                                | 0.50                                                                                | 0.50                                                                                | 0.44                                                                                | 0.65                                                                                | 0.21                                                                                |
| Avail Cap(c_a), veh/h        | 556                                                                               | 0                                                                                 | 549                                                                               | 436                                                                               | 0                                                                                 | 0                                                                                 | 415                                                                                 | 1077                                                                                | 1133                                                                                | 119                                                                                 | 1607                                                                                | 717                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 28.7                                                                              | 0.0                                                                               | 27.4                                                                              | 24.5                                                                              | 0.0                                                                               | 0.0                                                                               | 30.1                                                                                | 8.1                                                                                 | 8.1                                                                                 | 36.6                                                                                | 15.7                                                                                | 12.2                                                                                |
| Incr Delay (d2), s/veh       | 1.4                                                                               | 0.0                                                                               | 2.1                                                                               | 0.2                                                                               | 0.0                                                                               | 0.0                                                                               | 10.3                                                                                | 1.7                                                                                 | 1.6                                                                                 | 16.0                                                                                | 2.0                                                                                 | 0.7                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 3.3                                                                               | 0.0                                                                               | 3.2                                                                               | 0.3                                                                               | 0.0                                                                               | 0.0                                                                               | 4.9                                                                                 | 4.5                                                                                 | 4.7                                                                                 | 0.2                                                                                 | 6.7                                                                                 | 1.6                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 30.1                                                                              | 0.0                                                                               | 29.4                                                                              | 24.7                                                                              | 0.0                                                                               | 0.0                                                                               | 40.5                                                                                | 9.8                                                                                 | 9.7                                                                                 | 52.7                                                                                | 17.7                                                                                | 12.9                                                                                |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | C                                                                                 | C                                                                                 | A                                                                                 | A                                                                                 | D                                                                                   | A                                                                                   | A                                                                                   | D                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 386                                                                               |                                                                                   |                                                                                   | 20                                                                                |                                                                                   |                                                                                   | 1353                                                                                |                                                                                     |                                                                                     | 1205                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 29.8                                                                              |                                                                                   |                                                                                   | 24.7                                                                              |                                                                                   |                                                                                   | 15.3                                                                                |                                                                                     |                                                                                     | 17.3                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 4                                                                                 |                                                                                   | 5                                                                                 | 6                                                                                 | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 5.3                                                                               | 50.0                                                                              | 19.2                                                                              |                                                                                   | 16.8                                                                              | 38.4                                                                              | 19.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 5.0                                                                               | 45.5                                                                              | 26.0                                                                              |                                                                                   | 17.5                                                                              | 33.0                                                                              | 26.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 2.3                                                                               | 14.8                                                                              | 13.3                                                                              |                                                                                   | 12.1                                                                              | 19.0                                                                              | 10.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 8.8                                                                               | 1.5                                                                               |                                                                                   | 0.3                                                                               | 6.8                                                                               | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 18.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 11: 11th Avenue & SR 198 WB On Ramp/4th Street

10/31/2020

|                              |  |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |      |      |                                                                                     |                                                                                     |
|------------------------------|------------------------------------------------------------------------------------|------|-----|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                                | EBT  | EBR | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR  | SBL  | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                    |      |     |  |  |  |  |  |      |      |  |  |
| Traffic Volume (veh/h)       | 0                                                                                  | 0    | 0   | 218                                                                               | 35                                                                                | 261                                                                               | 91                                                                                  | 1045                                                                                | 0    | 0    | 1019                                                                                | 277                                                                                 |
| Future Volume (veh/h)        | 0                                                                                  | 0    | 0   | 218                                                                               | 35                                                                                | 261                                                                               | 91                                                                                  | 1045                                                                                | 0    | 0    | 1019                                                                                | 277                                                                                 |
| Initial Q (Qb), veh          |                                                                                    |      |     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0    | 0    | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          |                                                                                    |      |     | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00 | 1.00 |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             |                                                                                    |      |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00 | 1.00 | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                    |      |     | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |      |      | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       |                                                                                    |      |     | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 0    | 0    | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         |                                                                                    |      |     | 229                                                                               | 37                                                                                | 275                                                                               | 96                                                                                  | 1100                                                                                | 0    | 0    | 1073                                                                                | 292                                                                                 |
| Peak Hour Factor             |                                                                                    |      |     | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                                | 0.95                                                                                | 0.95 | 0.95 | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         |                                                                                    |      |     | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 0    | 0    | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   |                                                                                    |      |     | 377                                                                               | 396                                                                               | 336                                                                               | 123                                                                                 | 2357                                                                                | 0    | 0    | 1902                                                                                | 849                                                                                 |
| Arrive On Green              |                                                                                    |      |     | 0.21                                                                              | 0.21                                                                              | 0.21                                                                              | 0.07                                                                                | 0.67                                                                                | 0.00 | 0.00 | 0.54                                                                                | 0.54                                                                                |
| Sat Flow, veh/h              |                                                                                    |      |     | 1767                                                                              | 1856                                                                              | 1572                                                                              | 1767                                                                                | 3618                                                                                | 0    | 0    | 3618                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         |                                                                                    |      |     | 229                                                                               | 37                                                                                | 275                                                                               | 96                                                                                  | 1100                                                                                | 0    | 0    | 1073                                                                                | 292                                                                                 |
| Grp Sat Flow(s),veh/h/ln     |                                                                                    |      |     | 1767                                                                              | 1856                                                                              | 1572                                                                              | 1767                                                                                | 1763                                                                                | 0    | 0    | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              |                                                                                    |      |     | 8.9                                                                               | 1.2                                                                               | 12.7                                                                              | 4.1                                                                                 | 11.5                                                                                | 0.0  | 0.0  | 15.4                                                                                | 8.0                                                                                 |
| Cycle Q Clear(g_c), s        |                                                                                    |      |     | 8.9                                                                               | 1.2                                                                               | 12.7                                                                              | 4.1                                                                                 | 11.5                                                                                | 0.0  | 0.0  | 15.4                                                                                | 8.0                                                                                 |
| Prop In Lane                 |                                                                                    |      |     | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 0.00 | 0.00 |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       |                                                                                    |      |     | 377                                                                               | 396                                                                               | 336                                                                               | 123                                                                                 | 2357                                                                                | 0    | 0    | 1902                                                                                | 849                                                                                 |
| V/C Ratio(X)                 |                                                                                    |      |     | 0.61                                                                              | 0.09                                                                              | 0.82                                                                              | 0.78                                                                                | 0.47                                                                                | 0.00 | 0.00 | 0.56                                                                                | 0.34                                                                                |
| Avail Cap(c_a), veh/h        |                                                                                    |      |     | 695                                                                               | 730                                                                               | 618                                                                               | 220                                                                                 | 2357                                                                                | 0    | 0    | 1902                                                                                | 849                                                                                 |
| HCM Platoon Ratio            |                                                                                    |      |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00 | 1.00 | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           |                                                                                    |      |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 0.00 | 0.00 | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     |                                                                                    |      |     | 27.1                                                                              | 24.1                                                                              | 28.6                                                                              | 34.9                                                                                | 6.1                                                                                 | 0.0  | 0.0  | 11.6                                                                                | 9.9                                                                                 |
| Incr Delay (d2), s/veh       |                                                                                    |      |     | 1.6                                                                               | 0.1                                                                               | 4.9                                                                               | 10.0                                                                                | 0.7                                                                                 | 0.0  | 0.0  | 1.2                                                                                 | 1.1                                                                                 |
| Initial Q Delay(d3),s/veh    |                                                                                    |      |     | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0  | 0.0  | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     |                                                                                    |      |     | 3.6                                                                               | 0.5                                                                               | 4.8                                                                               | 2.0                                                                                 | 3.5                                                                                 | 0.0  | 0.0  | 5.5                                                                                 | 2.6                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                    |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |      |      |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         |                                                                                    |      |     | 28.7                                                                              | 24.2                                                                              | 33.5                                                                              | 44.9                                                                                | 6.8                                                                                 | 0.0  | 0.0  | 12.8                                                                                | 11.0                                                                                |
| LnGrp LOS                    |                                                                                    |      |     | C                                                                                 | C                                                                                 | C                                                                                 | D                                                                                   | A                                                                                   | A    | A    | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                    |      |     |                                                                                   | 541                                                                               |                                                                                   |                                                                                     | 1196                                                                                |      |      | 1365                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                    |      |     |                                                                                   | 30.8                                                                              |                                                                                   |                                                                                     | 9.8                                                                                 |      |      | 12.5                                                                                |                                                                                     |
| Approach LOS                 |                                                                                    |      |     |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | A                                                                                   |      |      | B                                                                                   |                                                                                     |
| Timer - Assigned Phs         |                                                                                    | 2    |     |                                                                                   | 5                                                                                 | 6                                                                                 |                                                                                     | 8                                                                                   |      |      |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                    | 55.5 |     |                                                                                   | 9.8                                                                               | 45.7                                                                              |                                                                                     | 20.8                                                                                |      |      |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                    | 4.5  |     |                                                                                   | 4.5                                                                               | 4.5                                                                               |                                                                                     | 4.5                                                                                 |      |      |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                    | 51.0 |     |                                                                                   | 9.5                                                                               | 37.0                                                                              |                                                                                     | 30.0                                                                                |      |      |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                    | 13.5 |     |                                                                                   | 6.1                                                                               | 17.4                                                                              |                                                                                     | 14.7                                                                                |      |      |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                    | 10.3 |     |                                                                                   | 0.1                                                                               | 8.7                                                                               |                                                                                     | 1.6                                                                                 |      |      |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                    |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |      |      |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                    |      |     | 14.6                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |      |      |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                    |      |     | B                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |      |      |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary 12: 11th Avenue & SR 198 EB Off Ramp/3rd Street

10/31/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |                                                                                   |                                                                                   |                                                                                   |                                                                                    |  |  |  |  |  |
| Traffic Volume (veh/h)       | 369                                                                               | 79                                                                                | 75                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 768                                                                                 | 203                                                                                 | 403                                                                                 | 839                                                                                 | 0                                                                                   |
| Future Volume (veh/h)        | 369                                                                               | 79                                                                                | 75                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 768                                                                                 | 203                                                                                 | 403                                                                                 | 839                                                                                 | 0                                                                                   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                 |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 0                                                                                   |
| Adj Flow Rate, veh/h         | 384                                                                               | 82                                                                                | 78                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 800                                                                                 | 211                                                                                 | 420                                                                                 | 874                                                                                 | 0                                                                                   |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.96                                                                               | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 0                                                                                   |
| Cap, veh/h                   | 421                                                                               | 90                                                                                | 451                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1062                                                                                | 474                                                                                 | 456                                                                                 | 2153                                                                                | 0                                                                                   |
| Arrive On Green              | 0.29                                                                              | 0.29                                                                              | 0.29                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.30                                                                                | 0.30                                                                                | 0.26                                                                                | 0.61                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 1469                                                                              | 314                                                                               | 1572                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 3618                                                                                | 1572                                                                                | 1767                                                                                | 3618                                                                                | 0                                                                                   |
| Grp Volume(v), veh/h         | 466                                                                               | 0                                                                                 | 78                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 800                                                                                 | 211                                                                                 | 420                                                                                 | 874                                                                                 | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1782                                                                              | 0                                                                                 | 1572                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1763                                                                                | 1572                                                                                | 1767                                                                                | 1763                                                                                | 0                                                                                   |
| Q Serve(g_s), s              | 22.1                                                                              | 0.0                                                                               | 3.3                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 18.0                                                                                | 9.5                                                                                 | 20.3                                                                                | 11.2                                                                                | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 22.1                                                                              | 0.0                                                                               | 3.3                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 18.0                                                                                | 9.5                                                                                 | 20.3                                                                                | 11.2                                                                                | 0.0                                                                                 |
| Prop In Lane                 | 0.82                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.00                                                                                |
| Lane Grp Cap(c), veh/h       | 511                                                                               | 0                                                                                 | 451                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1062                                                                                | 474                                                                                 | 456                                                                                 | 2153                                                                                | 0                                                                                   |
| V/C Ratio(X)                 | 0.91                                                                              | 0.00                                                                              | 0.17                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.75                                                                                | 0.45                                                                                | 0.92                                                                                | 0.41                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 559                                                                               | 0                                                                                 | 494                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1062                                                                                | 474                                                                                 | 494                                                                                 | 2153                                                                                | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 30.2                                                                              | 0.0                                                                               | 23.5                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 27.7                                                                                | 24.7                                                                                | 31.6                                                                                | 8.8                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 18.5                                                                              | 0.0                                                                               | 0.2                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 5.0                                                                                 | 3.0                                                                                 | 21.8                                                                                | 0.6                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 11.3                                                                              | 0.0                                                                               | 1.2                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 7.8                                                                                 | 3.7                                                                                 | 11.1                                                                                | 4.0                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 48.7                                                                              | 0.0                                                                               | 23.6                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 32.6                                                                                | 27.7                                                                                | 53.4                                                                                | 9.4                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | D                                                                                 | A                                                                                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | A                                                                                  | C                                                                                   | C                                                                                   | D                                                                                   | A                                                                                   | A                                                                                   |
| Approach Vol, veh/h          | 544                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 1011                                                                               |                                                                                     |                                                                                     | 1294                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 45.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 31.6                                                                               |                                                                                     |                                                                                     | 23.7                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | C                                                                                  |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 27.1                                                                              | 30.9                                                                              |                                                                                   | 29.6                                                                              |                                                                                   |                                                                                   | 58.0                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                   | 4.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 24.5                                                                              | 24.5                                                                              |                                                                                   | 27.5                                                                              |                                                                                   |                                                                                   | 53.5                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 22.3                                                                              | 20.0                                                                              |                                                                                   | 24.1                                                                              |                                                                                   |                                                                                   | 13.2                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.3                                                                               | 2.3                                                                               |                                                                                   | 1.0                                                                               |                                                                                   |                                                                                   | 7.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   |                                                                                   | 30.6                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



HCM 6th AWSC  
5: Campus Dr/Campus Drive & 7th Street

10/31/2020

| Intersection              |      |  |  |  |  |  |  |  |  |  |  |  |
|---------------------------|------|--|--|--|--|--|--|--|--|--|--|--|
| Intersection Delay, s/veh | 23.7 |  |  |  |  |  |  |  |  |  |  |  |
| Intersection LOS          | C    |  |  |  |  |  |  |  |  |  |  |  |

| Movement            | EBL                                                                               | EBT                                                                               | EBR  | WBL                                                                               | WBT                                                                               | WBR  | NBL  | NBT                                                                                 | NBR  | SBL  | SBT                                                                                 | SBR  |
|---------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|
| Lane Configurations |  |  |      |  |  |      |      |  |      |      |  |      |
| Traffic Vol, veh/h  | 70                                                                                | 265                                                                               | 39   | 22                                                                                | 337                                                                               | 40   | 62   | 143                                                                                 | 28   | 88   | 81                                                                                  | 87   |
| Future Vol, veh/h   | 70                                                                                | 265                                                                               | 39   | 22                                                                                | 337                                                                               | 40   | 62   | 143                                                                                 | 28   | 88   | 81                                                                                  | 87   |
| Peak Hour Factor    | 0.96                                                                              | 0.96                                                                              | 0.96 | 0.96                                                                              | 0.96                                                                              | 0.96 | 0.96 | 0.96                                                                                | 0.96 | 0.96 | 0.96                                                                                | 0.96 |
| Heavy Vehicles, %   | 3                                                                                 | 3                                                                                 | 3    | 3                                                                                 | 3                                                                                 | 3    | 3    | 3                                                                                   | 3    | 3    | 3                                                                                   | 3    |
| Mvmt Flow           | 73                                                                                | 276                                                                               | 41   | 23                                                                                | 351                                                                               | 42   | 65   | 149                                                                                 | 29   | 92   | 84                                                                                  | 91   |
| Number of Lanes     | 1                                                                                 | 1                                                                                 | 0    | 1                                                                                 | 1                                                                                 | 0    | 0    | 1                                                                                   | 0    | 0    | 1                                                                                   | 0    |

| Approach                   | EB   | WB   | NB   | SB |
|----------------------------|------|------|------|----|
| Opposing Approach          | WB   | EB   | SB   | NB |
| Opposing Lanes             | 2    | 2    | 1    | 1  |
| Conflicting Approach Left  | SB   | NB   | EB   | WB |
| Conflicting Lanes Left     | 1    | 1    | 2    | 2  |
| Conflicting Approach Right | NB   | SB   | WB   | EB |
| Conflicting Lanes Right    | 1    | 1    | 2    | 2  |
| HCM Control Delay          | 21.2 | 32.3 | 18.3 | 19 |
| HCM LOS                    | C    | D    | C    | C  |

| Lane                   | NBLn1 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | SBLn1 |
|------------------------|-------|-------|-------|-------|-------|-------|
| Vol Left, %            | 27%   | 100%  | 0%    | 100%  | 0%    | 34%   |
| Vol Thru, %            | 61%   | 0%    | 87%   | 0%    | 89%   | 32%   |
| Vol Right, %           | 12%   | 0%    | 13%   | 0%    | 11%   | 34%   |
| Sign Control           | Stop  | Stop  | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 233   | 70    | 304   | 22    | 377   | 256   |
| LT Vol                 | 62    | 70    | 0     | 22    | 0     | 88    |
| Through Vol            | 143   | 0     | 265   | 0     | 337   | 81    |
| RT Vol                 | 28    | 0     | 39    | 0     | 40    | 87    |
| Lane Flow Rate         | 243   | 73    | 317   | 23    | 393   | 267   |
| Geometry Grp           | 2     | 7     | 7     | 7     | 7     | 2     |
| Degree of Util (X)     | 0.51  | 0.163 | 0.654 | 0.05  | 0.8   | 0.546 |
| Departure Headway (Hd) | 7.563 | 8.039 | 7.43  | 7.929 | 7.338 | 7.371 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 476   | 446   | 485   | 451   | 495   | 488   |
| Service Time           | 5.622 | 5.792 | 5.183 | 5.68  | 5.088 | 5.427 |
| HCM Lane V/C Ratio     | 0.511 | 0.164 | 0.654 | 0.051 | 0.794 | 0.547 |
| HCM Control Delay      | 18.3  | 12.4  | 23.2  | 11.1  | 33.5  | 19    |
| HCM Lane LOS           | C     | B     | C     | B     | D     | C     |
| HCM 95th-tile Q        | 2.8   | 0.6   | 4.6   | 0.2   | 7.4   | 3.2   |

# NEAR-TERM WORKSHEETS

HCM 6th TWSC  
1: 12th Avenue & Glendale Avenue

11/03/2020

| Intersection             |      |      |                                                                                   |      |      |                                                                                   |      |                                                                                   |      |                                                                                     |                                                                                     |      |
|--------------------------|------|------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 2.4  |      |                                                                                   |      |      |                                                                                   |      |                                                                                   |      |                                                                                     |                                                                                     |      |
| Movement                 | EBL  | EBT  | EBR                                                                               | WBL  | WBT  | WBR                                                                               | NBL  | NBT                                                                               | NBR  | SBL                                                                                 | SBT                                                                                 | SBR  |
| Lane Configurations      |      |      |  |      |      |  |      |  |      |  |  |      |
| Traffic Vol, veh/h       | 0    | 0    | 78                                                                                | 0    | 0    | 98                                                                                | 0    | 1281                                                                              | 169  | 67                                                                                  | 841                                                                                 | 108  |
| Future Vol, veh/h        | 0    | 0    | 78                                                                                | 0    | 0    | 98                                                                                | 0    | 1281                                                                              | 169  | 67                                                                                  | 841                                                                                 | 108  |
| Conflicting Peds, #/hr   | 0    | 0    | 0                                                                                 | 0    | 0    | 0                                                                                 | 0    | 0                                                                                 | 0    | 0                                                                                   | 0                                                                                   | 0    |
| Sign Control             | Stop | Stop | Stop                                                                              | Stop | Stop | Stop                                                                              | Free | Free                                                                              | Free | Free                                                                                | Free                                                                                | Free |
| RT Channelized           | -    | -    | None                                                                              | -    | -    | None                                                                              | -    | -                                                                                 | None | -                                                                                   | -                                                                                   | None |
| Storage Length           | -    | -    | 0                                                                                 | -    | -    | 0                                                                                 | -    | -                                                                                 | -    | 125                                                                                 | -                                                                                   | -    |
| Veh in Median Storage, # | -    | 0    | -                                                                                 | -    | 0    | -                                                                                 | -    | 0                                                                                 | -    | -                                                                                   | 0                                                                                   | -    |
| Grade, %                 | -    | 0    | -                                                                                 | -    | 0    | -                                                                                 | -    | 0                                                                                 | -    | -                                                                                   | 0                                                                                   | -    |
| Peak Hour Factor         | 88   | 88   | 88                                                                                | 88   | 88   | 88                                                                                | 88   | 88                                                                                | 88   | 88                                                                                  | 88                                                                                  | 88   |
| Heavy Vehicles, %        | 3    | 3    | 3                                                                                 | 3    | 3    | 3                                                                                 | 3    | 3                                                                                 | 3    | 3                                                                                   | 3                                                                                   | 3    |
| Mvmt Flow                | 0    | 0    | 89                                                                                | 0    | 0    | 111                                                                               | 0    | 1456                                                                              | 192  | 76                                                                                  | 956                                                                                 | 123  |

| Major/Minor          | Minor2 |   | Minor1 |   | Major1 |      | Major2 |      |
|----------------------|--------|---|--------|---|--------|------|--------|------|
| Conflicting Flow All | -      | - | 540    | - | -      | 824  | -      | 0    |
| Stage 1              | -      | - | -      | - | -      | -    | -      | -    |
| Stage 2              | -      | - | -      | - | -      | -    | -      | -    |
| Critical Hdwy        | -      | - | 7.16   | - | -      | 7.16 | -      | 5.36 |
| Critical Hdwy Stg 1  | -      | - | -      | - | -      | -    | -      | -    |
| Critical Hdwy Stg 2  | -      | - | -      | - | -      | -    | -      | -    |
| Follow-up Hdwy       | -      | - | 3.93   | - | -      | 3.93 | -      | 3.13 |
| Pot Cap-1 Maneuver   | 0      | 0 | 414    | 0 | 0      | 270  | 0      | 186  |
| Stage 1              | 0      | 0 | -      | 0 | 0      | -    | -      | -    |
| Stage 2              | 0      | 0 | -      | 0 | 0      | -    | -      | -    |
| Platoon blocked, %   | -      | - | -      | - | -      | -    | -      | -    |
| Mov Cap-1 Maneuver   | -      | - | 414    | - | -      | 270  | -      | 186  |
| Mov Cap-2 Maneuver   | -      | - | -      | - | -      | -    | -      | -    |
| Stage 1              | -      | - | -      | - | -      | -    | -      | -    |
| Stage 2              | -      | - | -      | - | -      | -    | -      | -    |

| Approach             | EB | WB   | NB | SB  |
|----------------------|----|------|----|-----|
| HCM Control Delay, s | 16 | 27.4 | 0  | 2.4 |
| HCM LOS              | C  | D    |    |     |

| Minor Lane/Major Mvmt | NBT | NBR | EBLn1WBLn1 | SBL   | SBT   | SBR |
|-----------------------|-----|-----|------------|-------|-------|-----|
| Capacity (veh/h)      | -   | -   | 414        | 270   | 186   | -   |
| HCM Lane V/C Ratio    | -   | -   | 0.214      | 0.412 | 0.409 | -   |
| HCM Control Delay (s) | -   | -   | 16         | 27.4  | 37.2  | -   |
| HCM Lane LOS          | -   | -   | C          | D     | E     | -   |
| HCM 95th %tile Q(veh) | -   | -   | 0.8        | 1.9   | 1.8   | -   |

HCM 6th TWSC  
6: Campus Dr & 6th Street

11/03/2020

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 4.1  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 17   | 14   | 1    | 0    | 11   | 79   | 1    | 57   | 1    | 32   | 146  | 27   |
| Future Vol, veh/h        | 17   | 14   | 1    | 0    | 11   | 79   | 1    | 57   | 1    | 32   | 146  | 27   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 70   | 70   | 70   | 70   | 70   | 70   | 70   | 70   | 70   | 70   | 70   | 70   |
| Heavy Vehicles, %        | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    |
| Mvmt Flow                | 24   | 20   | 1    | 0    | 16   | 113  | 1    | 81   | 1    | 46   | 209  | 39   |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       | Major2 |   |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|--------|---|---|-------|---|---|
| Conflicting Flow All | 469    | 405   | 229    | 415   | 424    | 82    | 248    | 0 | 0 | 82    | 0 | 0 |
| Stage 1              | 321    | 321   | -      | 84    | 84     | -     | -      | - | - | -     | - | - |
| Stage 2              | 148    | 84    | -      | 331   | 340    | -     | -      | - | - | -     | - | - |
| Critical Hdwy        | 7.13   | 6.53  | 6.23   | 7.13  | 6.53   | 6.23  | 4.13   | - | - | 4.13  | - | - |
| Critical Hdwy Stg 1  | 6.13   | 5.53  | -      | 6.13  | 5.53   | -     | -      | - | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.13   | 5.53  | -      | 6.13  | 5.53   | -     | -      | - | - | -     | - | - |
| Follow-up Hdwy       | 3.527  | 4.027 | 3.327  | 3.527 | 4.027  | 3.327 | 2.227  | - | - | 2.227 | - | - |
| Pot Cap-1 Maneuver   | 503    | 533   | 808    | 546   | 520    | 975   | 1312   | - | - | 1509  | - | - |
| Stage 1              | 689    | 650   | -      | 922   | 823    | -     | -      | - | - | -     | - | - |
| Stage 2              | 852    | 823   | -      | 680   | 637    | -     | -      | - | - | -     | - | - |
| Platoon blocked, %   |        |       |        |       |        |       |        | - | - | -     | - | - |
| Mov Cap-1 Maneuver   | 422    | 513   | 808    | 514   | 501    | 975   | 1312   | - | - | 1509  | - | - |
| Mov Cap-2 Maneuver   | 422    | 513   | -      | 514   | 501    | -     | -      | - | - | -     | - | - |
| Stage 1              | 688    | 627   | -      | 921   | 822    | -     | -      | - | - | -     | - | - |
| Stage 2              | 738    | 822   | -      | 633   | 614    | -     | -      | - | - | -     | - | - |

| Approach             | EB   |  | WB  |  | NB  |  | SB  |  |
|----------------------|------|--|-----|--|-----|--|-----|--|
| HCM Control Delay, s | 13.6 |  | 9.8 |  | 0.1 |  | 1.2 |  |
| HCM LOS              | B    |  | A   |  |     |  |     |  |

| Minor Lane/Major Mvmt | NBL   | NBT | NBR | EBLn1WBLn1  | SBL  | SBT | SBR |
|-----------------------|-------|-----|-----|-------------|------|-----|-----|
| Capacity (veh/h)      | 1312  | -   | -   | 465 874     | 1509 | -   | -   |
| HCM Lane V/C Ratio    | 0.001 | -   | -   | 0.098 0.147 | 0.03 | -   | -   |
| HCM Control Delay (s) | 7.7   | 0   | -   | 13.6 9.8    | 7.5  | 0   | -   |
| HCM Lane LOS          | A     | A   | -   | B A         | A    | A   | -   |
| HCM 95th %tile Q(veh) | 0     | -   | -   | 0.3 0.5     | 0.1  | -   | -   |

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.8  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      |      | ↗    |      |      | ↗    | ↗    | ↗↘   |      | ↗    | ↗↘   |      |
| Traffic Vol, veh/h       | 0    | 0    | 56   | 0    | 0    | 56   | 107  | 841  | 69   | 80   | 586  | 15   |
| Future Vol, veh/h        | 0    | 0    | 56   | 0    | 0    | 56   | 107  | 841  | 69   | 80   | 586  | 15   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | 0    | -    | -    | 0    | 75   | -    | -    | 125  | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 87   | 87   | 87   | 87   | 87   | 87   | 87   | 87   | 87   | 87   | 87   | 87   |
| Heavy Vehicles, %        | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    |
| Mvmt Flow                | 0    | 0    | 64   | 0    | 0    | 64   | 123  | 967  | 79   | 92   | 674  | 17   |

| Major/Minor          | Minor2 |   | Minor1 |   | Major1 |      | Major2 |   |
|----------------------|--------|---|--------|---|--------|------|--------|---|
| Conflicting Flow All | -      | - | 346    | - | -      | 523  | 691    | 0 |
| Stage 1              | -      | - | -      | - | -      | -    | -      | - |
| Stage 2              | -      | - | -      | - | -      | -    | -      | - |
| Critical Hdwy        | -      | - | 6.96   | - | -      | 6.96 | 4.16   | - |
| Critical Hdwy Stg 1  | -      | - | -      | - | -      | -    | -      | - |
| Critical Hdwy Stg 2  | -      | - | -      | - | -      | -    | -      | - |
| Follow-up Hdwy       | -      | - | 3.33   | - | -      | 3.33 | 2.23   | - |
| Pot Cap-1 Maneuver   | 0      | 0 | 647    | 0 | 0      | 496  | 893    | - |
| Stage 1              | 0      | 0 | -      | 0 | 0      | -    | -      | - |
| Stage 2              | 0      | 0 | -      | 0 | 0      | -    | -      | - |
| Platoon blocked, %   | -      | - | -      | - | -      | -    | -      | - |
| Mov Cap-1 Maneuver   | -      | - | 647    | - | -      | 496  | 893    | - |
| Mov Cap-2 Maneuver   | -      | - | -      | - | -      | -    | -      | - |
| Stage 1              | -      | - | -      | - | -      | -    | -      | - |
| Stage 2              | -      | - | -      | - | -      | -    | -      | - |

| Approach             | EB   | WB   | NB | SB  |
|----------------------|------|------|----|-----|
| HCM Control Delay, s | 11.2 | 13.3 | 1  | 1.3 |
| HCM LOS              | B    | B    |    |     |

| Minor Lane/Major Mvmt | NBL   | NBT | NBR | EBLn1WBLn1 | SBL  | SBT  | SBR |
|-----------------------|-------|-----|-----|------------|------|------|-----|
| Capacity (veh/h)      | 893   | -   | -   | 647        | 496  | 655  | -   |
| HCM Lane V/C Ratio    | 0.138 | -   | -   | 0.099      | 0.13 | 0.14 | -   |
| HCM Control Delay (s) | 9.7   | -   | -   | 11.2       | 13.3 | 11.4 | -   |
| HCM Lane LOS          | A     | -   | -   | B          | B    | B    | -   |
| HCM 95th %tile Q(veh) | 0.5   | -   | -   | 0.3        | 0.4  | 0.5  | -   |

# HCM 6th Signalized Intersection Summary

## 2: SR 198 WB Ramps & 12th Avenue

11/03/2020

|                              |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | WBL                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                                 | SBR                                                                                 | NEL                                                                                 | NER                                                                                 |
| Lane Configurations          |  |  |  |  |                                                                                   |                                                                                   |  |  |                                                                                     |                                                                                     |
| Traffic Volume (veh/h)       | 50                                                                                | 527                                                                               | 55                                                                                | 927                                                                               | 0                                                                                 | 0                                                                                 | 577                                                                                 | 337                                                                                 | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 50                                                                                | 527                                                                               | 55                                                                                | 927                                                                               | 0                                                                                 | 0                                                                                 | 577                                                                                 | 337                                                                                 | 0                                                                                   | 0                                                                                   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 0                                                                                 | 0                                                                                 | 1856                                                                                | 1856                                                                                |                                                                                     |                                                                                     |
| Adj Flow Rate, veh/h         | 56                                                                                | 586                                                                               | 61                                                                                | 1030                                                                              | 0                                                                                 | 0                                                                                 | 641                                                                                 | 374                                                                                 |                                                                                     |                                                                                     |
| Peak Hour Factor             | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                                | 0.90                                                                                |                                                                                     |                                                                                     |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 3                                                                                   | 3                                                                                   |                                                                                     |                                                                                     |
| Cap, veh/h                   | 413                                                                               | 735                                                                               | 85                                                                                | 2279                                                                              | 0                                                                                 | 0                                                                                 | 1898                                                                                | 847                                                                                 |                                                                                     |                                                                                     |
| Arrive On Green              | 0.23                                                                              | 0.23                                                                              | 0.05                                                                              | 0.65                                                                              | 0.00                                                                              | 0.00                                                                              | 0.54                                                                                | 0.54                                                                                |                                                                                     |                                                                                     |
| Sat Flow, veh/h              | 1767                                                                              | 3145                                                                              | 1767                                                                              | 3618                                                                              | 0                                                                                 | 0                                                                                 | 3618                                                                                | 1572                                                                                |                                                                                     |                                                                                     |
| Grp Volume(v), veh/h         | 56                                                                                | 586                                                                               | 61                                                                                | 1030                                                                              | 0                                                                                 | 0                                                                                 | 641                                                                                 | 374                                                                                 |                                                                                     |                                                                                     |
| Grp Sat Flow(s),veh/h/ln     | 1767                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 0                                                                                 | 0                                                                                 | 1763                                                                                | 1572                                                                                |                                                                                     |                                                                                     |
| Q Serve(g_s), s              | 1.9                                                                               | 13.2                                                                              | 2.6                                                                               | 11.0                                                                              | 0.0                                                                               | 0.0                                                                               | 7.7                                                                                 | 10.8                                                                                |                                                                                     |                                                                                     |
| Cycle Q Clear(g_c), s        | 1.9                                                                               | 13.2                                                                              | 2.6                                                                               | 11.0                                                                              | 0.0                                                                               | 0.0                                                                               | 7.7                                                                                 | 10.8                                                                                |                                                                                     |                                                                                     |
| Prop In Lane                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 0.00                                                                              |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |
| Lane Grp Cap(c), veh/h       | 413                                                                               | 735                                                                               | 85                                                                                | 2279                                                                              | 0                                                                                 | 0                                                                                 | 1898                                                                                | 847                                                                                 |                                                                                     |                                                                                     |
| V/C Ratio(X)                 | 0.14                                                                              | 0.80                                                                              | 0.72                                                                              | 0.45                                                                              | 0.00                                                                              | 0.00                                                                              | 0.34                                                                                | 0.44                                                                                |                                                                                     |                                                                                     |
| Avail Cap(c_a), veh/h        | 765                                                                               | 1362                                                                              | 224                                                                               | 2279                                                                              | 0                                                                                 | 0                                                                                 | 1898                                                                                | 847                                                                                 |                                                                                     |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Uniform Delay (d), s/veh     | 22.8                                                                              | 27.1                                                                              | 35.2                                                                              | 6.6                                                                               | 0.0                                                                               | 0.0                                                                               | 9.8                                                                                 | 10.5                                                                                |                                                                                     |                                                                                     |
| Incr Delay (d2), s/veh       | 0.1                                                                               | 2.0                                                                               | 10.9                                                                              | 0.6                                                                               | 0.0                                                                               | 0.0                                                                               | 0.5                                                                                 | 1.7                                                                                 |                                                                                     |                                                                                     |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |
| %ile BackOfQ(50%),veh/ln     | 0.7                                                                               | 4.7                                                                               | 1.3                                                                               | 3.1                                                                               | 0.0                                                                               | 0.0                                                                               | 2.6                                                                                 | 3.5                                                                                 |                                                                                     |                                                                                     |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 22.9                                                                              | 29.1                                                                              | 46.1                                                                              | 7.3                                                                               | 0.0                                                                               | 0.0                                                                               | 10.3                                                                                | 12.2                                                                                |                                                                                     |                                                                                     |
| LnGrp LOS                    | C                                                                                 | C                                                                                 | D                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 | B                                                                                   | B                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          | 642                                                                               |                                                                                   |                                                                                   | 1091                                                                              |                                                                                   |                                                                                   | 1015                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 28.6                                                                              |                                                                                   |                                                                                   | 9.4                                                                               |                                                                                   |                                                                                   | 11.0                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 2                                                                                 |                                                                                   | 5                                                                                 |                                                                                   | 6                                                                                 | 8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 53.0                                                                              |                                                                                   | 8.1                                                                               |                                                                                   | 44.9                                                                              | 22.0                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 48.5                                                                              |                                                                                   | 9.5                                                                               |                                                                                   | 34.5                                                                              | 32.5                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 13.0                                                                              |                                                                                   | 4.6                                                                               |                                                                                   | 12.8                                                                              | 15.2                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 8.4                                                                               |                                                                                   | 0.0                                                                               |                                                                                   | 5.6                                                                               | 2.4                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 14.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary 3: 12th Avenue & SR 198 EB Off Ramps

11/03/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |  |  |                                                                                     |  |  |
| Traffic Volume (veh/h)       | 486                                                                               | 0                                                                                 | 17                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 495                                                                                 | 132                                                                                 | 0                                                                                   | 360                                                                                 | 265                                                                                 |
| Future Volume (veh/h)        | 486                                                                               | 0                                                                                 | 17                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 495                                                                                 | 132                                                                                 | 0                                                                                   | 360                                                                                 | 265                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 0                                                                                 | 1856                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1856                                                                                | 1856                                                                                | 0                                                                                   | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 540                                                                               | 0                                                                                 | 19                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 550                                                                                 | 0                                                                                   | 0                                                                                   | 400                                                                                 | 0                                                                                   |
| Peak Hour Factor             | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 0                                                                                 | 3                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 3                                                                                   | 3                                                                                   | 0                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 713                                                                               | 0                                                                                 | 327                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2314                                                                                |                                                                                     | 0                                                                                   | 2314                                                                                |                                                                                     |
| Arrive On Green              | 0.21                                                                              | 0.00                                                                              | 0.21                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 0.66                                                                                | 0.00                                                                                | 0.00                                                                                | 0.66                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 3428                                                                              | 0                                                                                 | 1572                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 3618                                                                                | 1572                                                                                | 0                                                                                   | 3618                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 540                                                                               | 0                                                                                 | 19                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 550                                                                                 | 0                                                                                   | 0                                                                                   | 400                                                                                 | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1714                                                                              | 0                                                                                 | 1572                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1763                                                                                | 1572                                                                                | 0                                                                                   | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 9.8                                                                               | 0.0                                                                               | 0.6                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 4.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 2.9                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 9.8                                                                               | 0.0                                                                               | 0.6                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 4.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 2.9                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                |                                                                                     | 1.00                                                                                | 0.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 713                                                                               | 0                                                                                 | 327                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2314                                                                                |                                                                                     | 0                                                                                   | 2314                                                                                |                                                                                     |
| V/C Ratio(X)                 | 0.76                                                                              | 0.00                                                                              | 0.06                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 0.24                                                                                |                                                                                     | 0.00                                                                                | 0.17                                                                                |                                                                                     |
| Avail Cap(c_a), veh/h        | 1939                                                                              | 0                                                                                 | 890                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2314                                                                                |                                                                                     | 0                                                                                   | 2314                                                                                |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 24.7                                                                              | 0.0                                                                               | 21.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 4.6                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 4.4                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 1.7                                                                               | 0.0                                                                               | 0.1                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 0.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.2                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 3.7                                                                               | 0.0                                                                               | 0.2                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 1.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.7                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 26.4                                                                              | 0.0                                                                               | 21.1                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 4.9                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 4.6                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | A                                                                                   | A                                                                                   |                                                                                     | A                                                                                   | A                                                                                   |                                                                                     |
| Approach Vol, veh/h          | 559                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 550                                                                                 |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 26.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 4.9                                                                                 |                                                                                     |                                                                                     | 4.6                                                                                 |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 48.0                                                                              |                                                                                   |                                                                                   | 18.3                                                                              |                                                                                   |                                                                                   | 48.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               |                                                                                   |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                   | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 43.5                                                                              |                                                                                   |                                                                                   | 37.5                                                                              |                                                                                   |                                                                                   | 43.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 6.2                                                                               |                                                                                   |                                                                                   | 11.8                                                                              |                                                                                   |                                                                                   | 4.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 3.8                                                                               |                                                                                   |                                                                                   | 2.0                                                                               |                                                                                   |                                                                                   | 2.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 12.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# HCM 6th Signalized Intersection Summary

## 4: Campus Drive & Lacey Boulevard

11/03/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)       | 22                                                                                | 422                                                                               | 75                                                                                | 98                                                                                | 422                                                                               | 47                                                                                | 36                                                                                  | 51                                                                                  | 71                                                                                  | 48                                                                                  | 70                                                                                  | 13                                                                                  |
| Future Volume (veh/h)        | 22                                                                                | 422                                                                               | 75                                                                                | 98                                                                                | 422                                                                               | 47                                                                                | 36                                                                                  | 51                                                                                  | 71                                                                                  | 48                                                                                  | 70                                                                                  | 13                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 24                                                                                | 459                                                                               | 82                                                                                | 107                                                                               | 459                                                                               | 51                                                                                | 39                                                                                  | 55                                                                                  | 77                                                                                  | 52                                                                                  | 76                                                                                  | 14                                                                                  |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 47                                                                                | 648                                                                               | 289                                                                               | 139                                                                               | 831                                                                               | 371                                                                               | 67                                                                                  | 298                                                                                 | 417                                                                                 | 93                                                                                  | 816                                                                                 | 692                                                                                 |
| Arrive On Green              | 0.03                                                                              | 0.18                                                                              | 0.18                                                                              | 0.08                                                                              | 0.24                                                                              | 0.24                                                                              | 0.04                                                                                | 0.43                                                                                | 0.43                                                                                | 0.05                                                                                | 0.44                                                                                | 0.44                                                                                |
| Sat Flow, veh/h              | 1767                                                                              | 3526                                                                              | 1572                                                                              | 1767                                                                              | 3526                                                                              | 1572                                                                              | 1767                                                                                | 700                                                                                 | 980                                                                                 | 1767                                                                                | 1856                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 24                                                                                | 459                                                                               | 82                                                                                | 107                                                                               | 459                                                                               | 51                                                                                | 39                                                                                  | 0                                                                                   | 132                                                                                 | 52                                                                                  | 76                                                                                  | 14                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1767                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                                | 0                                                                                   | 1679                                                                                | 1767                                                                                | 1856                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 0.9                                                                               | 8.5                                                                               | 3.1                                                                               | 4.1                                                                               | 7.9                                                                               | 1.4                                                                               | 1.5                                                                                 | 0.0                                                                                 | 3.4                                                                                 | 2.0                                                                                 | 1.7                                                                                 | 0.3                                                                                 |
| Cycle Q Clear(g_c), s        | 0.9                                                                               | 8.5                                                                               | 3.1                                                                               | 4.1                                                                               | 7.9                                                                               | 1.4                                                                               | 1.5                                                                                 | 0.0                                                                                 | 3.4                                                                                 | 2.0                                                                                 | 1.7                                                                                 | 0.3                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 0.58                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 47                                                                                | 648                                                                               | 289                                                                               | 139                                                                               | 831                                                                               | 371                                                                               | 67                                                                                  | 0                                                                                   | 714                                                                                 | 93                                                                                  | 816                                                                                 | 692                                                                                 |
| V/C Ratio(X)                 | 0.51                                                                              | 0.71                                                                              | 0.28                                                                              | 0.77                                                                              | 0.55                                                                              | 0.14                                                                              | 0.58                                                                                | 0.00                                                                                | 0.18                                                                                | 0.56                                                                                | 0.09                                                                                | 0.02                                                                                |
| Avail Cap(c_a), veh/h        | 166                                                                               | 1042                                                                              | 465                                                                               | 344                                                                               | 1398                                                                              | 624                                                                               | 191                                                                                 | 0                                                                                   | 714                                                                                 | 217                                                                                 | 816                                                                                 | 692                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 33.3                                                                              | 26.5                                                                              | 24.4                                                                              | 31.3                                                                              | 23.3                                                                              | 12.1                                                                              | 32.8                                                                                | 0.0                                                                                 | 12.4                                                                                | 32.1                                                                                | 11.3                                                                                | 11.0                                                                                |
| Incr Delay (d2), s/veh       | 8.2                                                                               | 1.4                                                                               | 0.5                                                                               | 8.7                                                                               | 0.6                                                                               | 0.2                                                                               | 7.7                                                                                 | 0.0                                                                                 | 0.6                                                                                 | 5.2                                                                                 | 0.2                                                                                 | 0.1                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.5                                                                               | 3.5                                                                               | 1.1                                                                               | 2.0                                                                               | 3.1                                                                               | 0.6                                                                               | 0.8                                                                                 | 0.0                                                                                 | 1.3                                                                                 | 1.0                                                                                 | 0.7                                                                                 | 0.1                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 41.5                                                                              | 28.0                                                                              | 24.9                                                                              | 40.0                                                                              | 23.9                                                                              | 12.3                                                                              | 40.5                                                                                | 0.0                                                                                 | 13.0                                                                                | 37.3                                                                                | 11.6                                                                                | 11.0                                                                                |
| LnGrp LOS                    | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 | B                                                                                 | D                                                                                   | A                                                                                   | B                                                                                   | D                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 565                                                                               |                                                                                   |                                                                                   | 617                                                                               |                                                                                   |                                                                                   | 171                                                                                 |                                                                                     |                                                                                     | 142                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 28.1                                                                              |                                                                                   |                                                                                   | 25.7                                                                              |                                                                                   |                                                                                   | 19.3                                                                                |                                                                                     |                                                                                     | 20.9                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 8.1                                                                               | 34.0                                                                              | 9.9                                                                               | 17.3                                                                              | 7.1                                                                               | 35.0                                                                              | 6.4                                                                                 | 20.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 8.5                                                                               | 29.5                                                                              | 13.5                                                                              | 20.5                                                                              | 7.5                                                                               | 30.5                                                                              | 6.5                                                                                 | 27.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 4.0                                                                               | 5.4                                                                               | 6.1                                                                               | 10.5                                                                              | 3.5                                                                               | 3.7                                                                               | 2.9                                                                                 | 9.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.7                                                                               | 0.1                                                                               | 2.3                                                                               | 0.0                                                                               | 0.4                                                                               | 0.0                                                                                 | 2.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 25.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 7: 11th Avenue & Lacey Boulevard

11/03/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |   |  |  |  |  |  |
| Traffic Volume (veh/h)       | 90                                                                                | 190                                                                               | 119                                                                               | 45                                                                                | 243                                                                               | 45                                                                                | 280                                                                                 | 486                                                                                 | 54                                                                                  | 66                                                                                  | 554                                                                                 | 142                                                                                 |
| Future Volume (veh/h)        | 90                                                                                | 190                                                                               | 119                                                                               | 45                                                                                | 243                                                                               | 45                                                                                | 280                                                                                 | 486                                                                                 | 54                                                                                  | 66                                                                                  | 554                                                                                 | 142                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 100                                                                               | 211                                                                               | 132                                                                               | 50                                                                                | 270                                                                               | 50                                                                                | 311                                                                                 | 540                                                                                 | 60                                                                                  | 73                                                                                  | 616                                                                                 | 158                                                                                 |
| Peak Hour Factor             | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 216                                                                               | 564                                                                               | 251                                                                               | 80                                                                                | 423                                                                               | 77                                                                                | 421                                                                                 | 1506                                                                                | 167                                                                                 | 98                                                                                  | 1422                                                                                | 634                                                                                 |
| Arrive On Green              | 0.06                                                                              | 0.16                                                                              | 0.16                                                                              | 0.05                                                                              | 0.14                                                                              | 0.14                                                                              | 0.12                                                                                | 0.47                                                                                | 0.47                                                                                | 0.06                                                                                | 0.40                                                                                | 0.40                                                                                |
| Sat Flow, veh/h              | 3428                                                                              | 3526                                                                              | 1572                                                                              | 1767                                                                              | 2977                                                                              | 544                                                                               | 3428                                                                                | 3200                                                                                | 355                                                                                 | 1767                                                                                | 3526                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 100                                                                               | 211                                                                               | 132                                                                               | 50                                                                                | 158                                                                               | 162                                                                               | 311                                                                                 | 297                                                                                 | 303                                                                                 | 73                                                                                  | 616                                                                                 | 158                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1714                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 1758                                                                              | 1714                                                                                | 1763                                                                                | 1792                                                                                | 1767                                                                                | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 1.9                                                                               | 3.6                                                                               | 3.6                                                                               | 1.9                                                                               | 5.7                                                                               | 5.8                                                                               | 5.9                                                                                 | 7.2                                                                                 | 7.2                                                                                 | 2.7                                                                                 | 8.5                                                                                 | 4.5                                                                                 |
| Cycle Q Clear(g_c), s        | 1.9                                                                               | 3.6                                                                               | 3.6                                                                               | 1.9                                                                               | 5.7                                                                               | 5.8                                                                               | 5.9                                                                                 | 7.2                                                                                 | 7.2                                                                                 | 2.7                                                                                 | 8.5                                                                                 | 4.5                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.31                                                                              | 1.00                                                                                |                                                                                     | 0.20                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 216                                                                               | 564                                                                               | 251                                                                               | 80                                                                                | 250                                                                               | 250                                                                               | 421                                                                                 | 830                                                                                 | 843                                                                                 | 98                                                                                  | 1422                                                                                | 634                                                                                 |
| V/C Ratio(X)                 | 0.46                                                                              | 0.37                                                                              | 0.53                                                                              | 0.63                                                                              | 0.63                                                                              | 0.65                                                                              | 0.74                                                                                | 0.36                                                                                | 0.36                                                                                | 0.74                                                                                | 0.43                                                                                | 0.25                                                                                |
| Avail Cap(c_a), veh/h        | 282                                                                               | 1411                                                                              | 629                                                                               | 177                                                                               | 737                                                                               | 735                                                                               | 589                                                                                 | 830                                                                                 | 843                                                                                 | 240                                                                                 | 1422                                                                                | 634                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 30.3                                                                              | 25.1                                                                              | 12.4                                                                              | 31.4                                                                              | 27.1                                                                              | 27.1                                                                              | 28.3                                                                                | 11.3                                                                                | 11.3                                                                                | 31.1                                                                                | 14.4                                                                                | 13.2                                                                                |
| Incr Delay (d2), s/veh       | 1.5                                                                               | 0.4                                                                               | 1.7                                                                               | 7.8                                                                               | 2.6                                                                               | 2.8                                                                               | 3.1                                                                                 | 1.2                                                                                 | 1.2                                                                                 | 10.6                                                                                | 1.0                                                                                 | 0.9                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.8                                                                               | 1.4                                                                               | 1.9                                                                               | 0.9                                                                               | 2.4                                                                               | 2.5                                                                               | 2.4                                                                                 | 2.7                                                                                 | 2.7                                                                                 | 1.4                                                                                 | 3.2                                                                                 | 1.6                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 31.8                                                                              | 25.5                                                                              | 14.1                                                                              | 39.2                                                                              | 29.7                                                                              | 30.0                                                                              | 31.4                                                                                | 12.5                                                                                | 12.5                                                                                | 41.7                                                                                | 15.4                                                                                | 14.2                                                                                |
| LnGrp LOS                    | C                                                                                 | C                                                                                 | B                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | C                                                                                   | B                                                                                   | B                                                                                   | D                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 443                                                                               |                                                                                   |                                                                                   | 370                                                                               |                                                                                   |                                                                                   | 911                                                                                 |                                                                                     |                                                                                     | 847                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 23.6                                                                              |                                                                                   |                                                                                   | 31.1                                                                              |                                                                                   |                                                                                   | 18.9                                                                                |                                                                                     |                                                                                     | 17.4                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 8.2                                                                               | 36.0                                                                              | 7.5                                                                               | 15.2                                                                              | 12.7                                                                              | 31.5                                                                              | 8.7                                                                                 | 14.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 9.1                                                                               | 29.4                                                                              | 6.7                                                                               | 26.8                                                                              | 11.5                                                                              | 27.0                                                                              | 5.5                                                                                 | 28.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 4.7                                                                               | 9.2                                                                               | 3.9                                                                               | 5.6                                                                               | 7.9                                                                               | 10.5                                                                              | 3.9                                                                                 | 7.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 3.5                                                                               | 0.0                                                                               | 1.6                                                                               | 0.4                                                                               | 4.2                                                                               | 0.0                                                                                 | 1.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 21.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary 8: 11th Avenue & 7th Street

11/03/2020

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 40                                                                                | 105                                                                               | 71                                                                                | 79                                                                                | 122                                                                               | 52                                                                                | 167                                                                                 | 485                                                                                 | 106                                                                                 | 77                                                                                  | 363                                                                                 | 69                                                                                  |
| Future Volume (veh/h)        | 40                                                                                | 105                                                                               | 71                                                                                | 79                                                                                | 122                                                                               | 52                                                                                | 167                                                                                 | 485                                                                                 | 106                                                                                 | 77                                                                                  | 363                                                                                 | 69                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 45                                                                                | 119                                                                               | 81                                                                                | 90                                                                                | 139                                                                               | 59                                                                                | 190                                                                                 | 551                                                                                 | 120                                                                                 | 88                                                                                  | 412                                                                                 | 78                                                                                  |
| Peak Hour Factor             | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 148                                                                               | 220                                                                               | 139                                                                               | 116                                                                               | 314                                                                               | 128                                                                               | 236                                                                                 | 1692                                                                                | 755                                                                                 | 114                                                                                 | 1447                                                                                | 645                                                                                 |
| Arrive On Green              | 0.04                                                                              | 0.11                                                                              | 0.11                                                                              | 0.07                                                                              | 0.13                                                                              | 0.13                                                                              | 0.13                                                                                | 0.48                                                                                | 0.48                                                                                | 0.06                                                                                | 0.41                                                                                | 0.41                                                                                |
| Sat Flow, veh/h              | 3428                                                                              | 2070                                                                              | 1312                                                                              | 1767                                                                              | 2447                                                                              | 993                                                                               | 1767                                                                                | 3526                                                                                | 1572                                                                                | 1767                                                                                | 3526                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 45                                                                                | 100                                                                               | 100                                                                               | 90                                                                                | 98                                                                                | 100                                                                               | 190                                                                                 | 551                                                                                 | 120                                                                                 | 88                                                                                  | 412                                                                                 | 78                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1714                                                                              | 1763                                                                              | 1619                                                                              | 1767                                                                              | 1763                                                                              | 1677                                                                              | 1767                                                                                | 1763                                                                                | 1572                                                                                | 1767                                                                                | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 0.8                                                                               | 3.4                                                                               | 3.7                                                                               | 3.2                                                                               | 3.3                                                                               | 3.5                                                                               | 6.6                                                                                 | 6.1                                                                                 | 1.6                                                                                 | 3.1                                                                                 | 4.9                                                                                 | 1.9                                                                                 |
| Cycle Q Clear(g_c), s        | 0.8                                                                               | 3.4                                                                               | 3.7                                                                               | 3.2                                                                               | 3.3                                                                               | 3.5                                                                               | 6.6                                                                                 | 6.1                                                                                 | 1.6                                                                                 | 3.1                                                                                 | 4.9                                                                                 | 1.9                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.81                                                                              | 1.00                                                                              |                                                                                   | 0.59                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 148                                                                               | 187                                                                               | 172                                                                               | 116                                                                               | 226                                                                               | 215                                                                               | 236                                                                                 | 1692                                                                                | 755                                                                                 | 114                                                                                 | 1447                                                                                | 645                                                                                 |
| V/C Ratio(X)                 | 0.30                                                                              | 0.53                                                                              | 0.58                                                                              | 0.78                                                                              | 0.43                                                                              | 0.46                                                                              | 0.80                                                                                | 0.33                                                                                | 0.16                                                                                | 0.77                                                                                | 0.28                                                                                | 0.12                                                                                |
| Avail Cap(c_a), veh/h        | 271                                                                               | 723                                                                               | 665                                                                               | 209                                                                               | 793                                                                               | 754                                                                               | 349                                                                                 | 1692                                                                                | 755                                                                                 | 273                                                                                 | 1447                                                                                | 645                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 29.4                                                                              | 26.8                                                                              | 27.0                                                                              | 29.2                                                                              | 25.5                                                                              | 25.6                                                                              | 26.6                                                                                | 10.2                                                                                | 3.4                                                                                 | 29.2                                                                                | 12.5                                                                                | 11.6                                                                                |
| Incr Delay (d2), s/veh       | 1.1                                                                               | 2.4                                                                               | 3.1                                                                               | 10.7                                                                              | 1.3                                                                               | 1.5                                                                               | 8.2                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 10.7                                                                                | 0.5                                                                                 | 0.4                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.3                                                                               | 1.5                                                                               | 1.5                                                                               | 1.7                                                                               | 1.4                                                                               | 1.4                                                                               | 3.1                                                                                 | 2.1                                                                                 | 0.9                                                                                 | 1.6                                                                                 | 1.8                                                                                 | 0.7                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 30.5                                                                              | 29.2                                                                              | 30.1                                                                              | 39.8                                                                              | 26.8                                                                              | 27.1                                                                              | 34.8                                                                                | 10.7                                                                                | 3.8                                                                                 | 39.8                                                                                | 13.0                                                                                | 12.0                                                                                |
| LnGrp LOS                    | C                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | C                                                                                   | B                                                                                   | A                                                                                   | D                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 245                                                                               |                                                                                   |                                                                                   | 288                                                                               |                                                                                   |                                                                                   | 861                                                                                 |                                                                                     |                                                                                     | 578                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 29.8                                                                              |                                                                                   |                                                                                   | 31.0                                                                              |                                                                                   |                                                                                   | 15.0                                                                                |                                                                                     |                                                                                     | 16.9                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 8.6                                                                               | 34.9                                                                              | 8.6                                                                               | 11.2                                                                              | 13.0                                                                              | 30.5                                                                              | 7.2                                                                                 | 12.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 9.8                                                                               | 28.7                                                                              | 7.5                                                                               | 26.0                                                                              | 12.5                                                                              | 26.0                                                                              | 5.0                                                                                 | 28.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 5.1                                                                               | 8.1                                                                               | 5.2                                                                               | 5.7                                                                               | 8.6                                                                               | 6.9                                                                               | 2.8                                                                                 | 5.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 3.9                                                                               | 0.0                                                                               | 1.0                                                                               | 0.2                                                                               | 2.7                                                                               | 0.0                                                                                 | 1.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 19.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 10: 11th Avenue & 5th Street

11/03/2020

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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |                                                                                   |  |                                                                                   |  |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)       | 40                                                                                | 0                                                                                 | 60                                                                                | 4                                                                                 | 0                                                                                 | 5                                                                                 | 169                                                                                 | 971                                                                                 | 25                                                                                  | 1                                                                                   | 544                                                                                 | 98                                                                                  |
| Future Volume (veh/h)        | 40                                                                                | 0                                                                                 | 60                                                                                | 4                                                                                 | 0                                                                                 | 5                                                                                 | 169                                                                                 | 971                                                                                 | 25                                                                                  | 1                                                                                   | 544                                                                                 | 98                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 47                                                                                | 0                                                                                 | 70                                                                                | 5                                                                                 | 0                                                                                 | 6                                                                                 | 197                                                                                 | 1129                                                                                | 29                                                                                  | 1                                                                                   | 633                                                                                 | 114                                                                                 |
| Peak Hour Factor             | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                                | 0.86                                                                                | 0.86                                                                                | 0.86                                                                                | 0.86                                                                                | 0.86                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 234                                                                               | 0                                                                                 | 116                                                                               | 103                                                                               | 22                                                                                | 51                                                                                | 250                                                                                 | 2493                                                                                | 64                                                                                  | 3                                                                                   | 2008                                                                                | 896                                                                                 |
| Arrive On Green              | 0.07                                                                              | 0.00                                                                              | 0.07                                                                              | 0.07                                                                              | 0.00                                                                              | 0.07                                                                              | 0.14                                                                                | 0.71                                                                                | 0.71                                                                                | 0.00                                                                                | 0.57                                                                                | 0.57                                                                                |
| Sat Flow, veh/h              | 1399                                                                              | 0                                                                                 | 1572                                                                              | 272                                                                               | 301                                                                               | 687                                                                               | 1767                                                                                | 3512                                                                                | 90                                                                                  | 1767                                                                                | 3526                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 47                                                                                | 0                                                                                 | 70                                                                                | 11                                                                                | 0                                                                                 | 0                                                                                 | 197                                                                                 | 567                                                                                 | 591                                                                                 | 1                                                                                   | 633                                                                                 | 114                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1399                                                                              | 0                                                                                 | 1572                                                                              | 1260                                                                              | 0                                                                                 | 0                                                                                 | 1767                                                                                | 1763                                                                                | 1839                                                                                | 1767                                                                                | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 0.0                                                                               | 2.7                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 6.8                                                                                 | 8.6                                                                                 | 8.6                                                                                 | 0.0                                                                                 | 5.9                                                                                 | 2.1                                                                                 |
| Cycle Q Clear(g_c), s        | 1.6                                                                               | 0.0                                                                               | 2.7                                                                               | 2.7                                                                               | 0.0                                                                               | 0.0                                                                               | 6.8                                                                                 | 8.6                                                                                 | 8.6                                                                                 | 0.0                                                                                 | 5.9                                                                                 | 2.1                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 0.45                                                                              |                                                                                   | 0.55                                                                              | 1.00                                                                                |                                                                                     | 0.05                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 234                                                                               | 0                                                                                 | 116                                                                               | 176                                                                               | 0                                                                                 | 0                                                                                 | 250                                                                                 | 1251                                                                                | 1305                                                                                | 3                                                                                   | 2008                                                                                | 896                                                                                 |
| V/C Ratio(X)                 | 0.20                                                                              | 0.00                                                                              | 0.61                                                                              | 0.06                                                                              | 0.00                                                                              | 0.00                                                                              | 0.79                                                                                | 0.45                                                                                | 0.45                                                                                | 0.35                                                                                | 0.32                                                                                | 0.13                                                                                |
| Avail Cap(c_a), veh/h        | 722                                                                               | 0                                                                                 | 665                                                                               | 681                                                                               | 0                                                                                 | 0                                                                                 | 606                                                                                 | 1251                                                                                | 1305                                                                                | 155                                                                                 | 2008                                                                                | 896                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 27.6                                                                              | 0.0                                                                               | 28.2                                                                              | 27.1                                                                              | 0.0                                                                               | 0.0                                                                               | 26.0                                                                                | 3.9                                                                                 | 3.9                                                                                 | 31.3                                                                                | 7.1                                                                                 | 6.3                                                                                 |
| Incr Delay (d2), s/veh       | 0.4                                                                               | 0.0                                                                               | 5.0                                                                               | 0.1                                                                               | 0.0                                                                               | 0.0                                                                               | 5.4                                                                                 | 1.2                                                                                 | 1.1                                                                                 | 62.4                                                                                | 0.4                                                                                 | 0.3                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.7                                                                               | 0.0                                                                               | 1.1                                                                               | 0.2                                                                               | 0.0                                                                               | 0.0                                                                               | 3.1                                                                                 | 2.2                                                                                 | 2.3                                                                                 | 0.1                                                                                 | 1.9                                                                                 | 0.6                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 28.1                                                                              | 0.0                                                                               | 33.2                                                                              | 27.2                                                                              | 0.0                                                                               | 0.0                                                                               | 31.4                                                                                | 5.1                                                                                 | 5.0                                                                                 | 93.7                                                                                | 7.5                                                                                 | 6.6                                                                                 |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | C                                                                                 | C                                                                                 | A                                                                                 | A                                                                                 | C                                                                                   | A                                                                                   | A                                                                                   | F                                                                                   | A                                                                                   | A                                                                                   |
| Approach Vol, veh/h          | 117                                                                               |                                                                                   |                                                                                   | 11                                                                                |                                                                                   |                                                                                   | 1355                                                                                |                                                                                     |                                                                                     | 748                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 31.1                                                                              |                                                                                   |                                                                                   | 27.2                                                                              |                                                                                   |                                                                                   | 8.9                                                                                 |                                                                                     |                                                                                     | 7.5                                                                                 |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 4.6                                                                               | 49.0                                                                              |                                                                                   | 9.1                                                                               | 13.4                                                                              | 40.2                                                                              |                                                                                     | 9.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               |                                                                                     | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 5.5                                                                               | 44.5                                                                              |                                                                                   | 26.5                                                                              | 21.5                                                                              | 28.5                                                                              |                                                                                     | 26.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 2.0                                                                               | 10.6                                                                              |                                                                                   | 4.7                                                                               | 8.8                                                                               | 7.9                                                                               |                                                                                     | 4.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 9.7                                                                               |                                                                                   | 0.5                                                                               | 0.4                                                                               | 4.7                                                                               |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 9.7                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 11: 11th Avenue & SR 198 WB On Ramp/4th Street

11/03/2020

|                              |  |      |     |      |      |      |      |      |      |      |      |      |
|------------------------------|------------------------------------------------------------------------------------|------|-----|------|------|------|------|------|------|------|------|------|
| Movement                     | EBL                                                                                | EBT  | EBR | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations          |                                                                                    |      |     | ↰    | ↱    | ↰    | ↰    | ↱    |      |      | ↱    | ↰    |
| Traffic Volume (veh/h)       | 0                                                                                  | 0    | 0   | 128  | 17   | 353  | 56   | 820  | 0    | 0    | 465  | 176  |
| Future Volume (veh/h)        | 0                                                                                  | 0    | 0   | 128  | 17   | 353  | 56   | 820  | 0    | 0    | 465  | 176  |
| Initial Q (Qb), veh          |                                                                                    |      |     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Ped-Bike Adj(A_pbT)          |                                                                                    |      |     | 1.00 |      | 1.00 | 1.00 |      | 1.00 | 1.00 |      | 1.00 |
| Parking Bus, Adj             |                                                                                    |      |     | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach        |                                                                                    |      |     | No   |      |      | No   |      |      |      | No   |      |
| Adj Sat Flow, veh/h/ln       |                                                                                    |      |     | 1856 | 1856 | 1856 | 1856 | 1856 | 0    | 0    | 1856 | 1856 |
| Adj Flow Rate, veh/h         |                                                                                    |      |     | 149  | 20   | 410  | 65   | 953  | 0    | 0    | 541  | 205  |
| Peak Hour Factor             |                                                                                    |      |     | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 |
| Percent Heavy Veh, %         |                                                                                    |      |     | 3    | 3    | 3    | 3    | 3    | 0    | 0    | 3    | 3    |
| Cap, veh/h                   |                                                                                    |      |     | 529  | 556  | 471  | 88   | 2038 | 0    | 0    | 1646 | 734  |
| Arrive On Green              |                                                                                    |      |     | 0.30 | 0.30 | 0.30 | 0.05 | 0.58 | 0.00 | 0.00 | 0.47 | 0.47 |
| Sat Flow, veh/h              |                                                                                    |      |     | 1767 | 1856 | 1572 | 1767 | 3618 | 0    | 0    | 3618 | 1572 |
| Grp Volume(v), veh/h         |                                                                                    |      |     | 149  | 20   | 410  | 65   | 953  | 0    | 0    | 541  | 205  |
| Grp Sat Flow(s),veh/h/ln     |                                                                                    |      |     | 1767 | 1856 | 1572 | 1767 | 1763 | 0    | 0    | 1763 | 1572 |
| Q Serve(g_s), s              |                                                                                    |      |     | 4.7  | 0.6  | 18.2 | 2.7  | 11.5 | 0.0  | 0.0  | 7.1  | 5.9  |
| Cycle Q Clear(g_c), s        |                                                                                    |      |     | 4.7  | 0.6  | 18.2 | 2.7  | 11.5 | 0.0  | 0.0  | 7.1  | 5.9  |
| Prop In Lane                 |                                                                                    |      |     | 1.00 |      | 1.00 | 1.00 |      | 0.00 | 0.00 |      | 1.00 |
| Lane Grp Cap(c), veh/h       |                                                                                    |      |     | 529  | 556  | 471  | 88   | 2038 | 0    | 0    | 1646 | 734  |
| V/C Ratio(X)                 |                                                                                    |      |     | 0.28 | 0.04 | 0.87 | 0.74 | 0.47 | 0.00 | 0.00 | 0.33 | 0.28 |
| Avail Cap(c_a), veh/h        |                                                                                    |      |     | 926  | 972  | 824  | 252  | 2038 | 0    | 0    | 1646 | 734  |
| HCM Platoon Ratio            |                                                                                    |      |     | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I)           |                                                                                    |      |     | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh     |                                                                                    |      |     | 19.7 | 18.2 | 24.4 | 34.4 | 9.0  | 0.0  | 0.0  | 12.3 | 12.0 |
| Incr Delay (d2), s/veh       |                                                                                    |      |     | 0.3  | 0.0  | 5.1  | 11.2 | 0.8  | 0.0  | 0.0  | 0.5  | 0.9  |
| Initial Q Delay(d3),s/veh    |                                                                                    |      |     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile BackOfQ(50%),veh/ln     |                                                                                    |      |     | 1.8  | 0.2  | 6.6  | 1.4  | 4.0  | 0.0  | 0.0  | 2.6  | 2.0  |
| Unsig. Movement Delay, s/veh |                                                                                    |      |     |      |      |      |      |      |      |      |      |      |
| LnGrp Delay(d),s/veh         |                                                                                    |      |     | 20.0 | 18.3 | 29.5 | 45.7 | 9.7  | 0.0  | 0.0  | 12.9 | 13.0 |
| LnGrp LOS                    |                                                                                    |      |     | B    | B    | C    | D    | A    | A    | A    | B    | B    |
| Approach Vol, veh/h          |                                                                                    |      |     |      | 579  |      |      | 1018 |      |      | 746  |      |
| Approach Delay, s/veh        |                                                                                    |      |     |      | 26.7 |      |      | 12.0 |      |      | 12.9 |      |
| Approach LOS                 |                                                                                    |      |     |      | C    |      |      | B    |      |      | B    |      |
| Timer - Assigned Phs         |                                                                                    | 2    |     |      | 5    | 6    |      | 8    |      |      |      |      |
| Phs Duration (G+Y+Rc), s     |                                                                                    | 47.0 |     |      | 8.2  | 38.8 |      | 26.5 |      |      |      |      |
| Change Period (Y+Rc), s      |                                                                                    | 4.5  |     |      | 4.5  | 4.5  |      | 4.5  |      |      |      |      |
| Max Green Setting (Gmax), s  |                                                                                    | 42.5 |     |      | 10.5 | 27.5 |      | 38.5 |      |      |      |      |
| Max Q Clear Time (g_c+I1), s |                                                                                    | 13.5 |     |      | 4.7  | 9.1  |      | 20.2 |      |      |      |      |
| Green Ext Time (p_c), s      |                                                                                    | 7.9  |     |      | 0.0  | 4.0  |      | 1.8  |      |      |      |      |
| <b>Intersection Summary</b>  |                                                                                    |      |     |      |      |      |      |      |      |      |      |      |
| HCM 6th Ctrl Delay           |                                                                                    |      |     | 15.9 |      |      |      |      |      |      |      |      |
| HCM 6th LOS                  |                                                                                    |      |     | B    |      |      |      |      |      |      |      |      |

# HCM 6th Signalized Intersection Summary 12: 11th Avenue & SR 198 EB Off Ramp/3rd Street

11/03/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |                                                                                   |                                                                                   |                                                                                   |                                                                                    |  |  |  |  |  |
| Traffic Volume (veh/h)       | 261                                                                               | 152                                                                               | 92                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 618                                                                                 | 145                                                                                 | 133                                                                                 | 463                                                                                 | 0                                                                                   |
| Future Volume (veh/h)        | 261                                                                               | 152                                                                               | 92                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 618                                                                                 | 145                                                                                 | 133                                                                                 | 463                                                                                 | 0                                                                                   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                 |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 0                                                                                   |
| Adj Flow Rate, veh/h         | 326                                                                               | 190                                                                               | 115                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 772                                                                                 | 181                                                                                 | 166                                                                                 | 579                                                                                 | 0                                                                                   |
| Peak Hour Factor             | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.80                                                                               | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 0                                                                                   |
| Cap, veh/h                   | 370                                                                               | 216                                                                               | 512                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1391                                                                                | 621                                                                                 | 204                                                                                 | 1991                                                                                | 0                                                                                   |
| Arrive On Green              | 0.33                                                                              | 0.33                                                                              | 0.33                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.39                                                                                | 0.39                                                                                | 0.12                                                                                | 0.56                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 1136                                                                              | 662                                                                               | 1572                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 3618                                                                                | 1572                                                                                | 1767                                                                                | 3618                                                                                | 0                                                                                   |
| Grp Volume(v), veh/h         | 516                                                                               | 0                                                                                 | 115                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 772                                                                                 | 181                                                                                 | 166                                                                                 | 579                                                                                 | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1799                                                                              | 0                                                                                 | 1572                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1763                                                                                | 1572                                                                                | 1767                                                                                | 1763                                                                                | 0                                                                                   |
| Q Serve(g_s), s              | 22.3                                                                              | 0.0                                                                               | 4.4                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 14.0                                                                                | 6.5                                                                                 | 7.5                                                                                 | 7.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 22.3                                                                              | 0.0                                                                               | 4.4                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 14.0                                                                                | 6.5                                                                                 | 7.5                                                                                 | 7.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 0.63                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.00                                                                                |
| Lane Grp Cap(c), veh/h       | 586                                                                               | 0                                                                                 | 512                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1391                                                                                | 621                                                                                 | 204                                                                                 | 1991                                                                                | 0                                                                                   |
| V/C Ratio(X)                 | 0.88                                                                              | 0.00                                                                              | 0.22                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.55                                                                                | 0.29                                                                                | 0.81                                                                                | 0.29                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 754                                                                               | 0                                                                                 | 659                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1391                                                                                | 621                                                                                 | 311                                                                                 | 1991                                                                                | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 26.2                                                                              | 0.0                                                                               | 20.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 19.3                                                                                | 17.0                                                                                | 35.5                                                                                | 9.3                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 9.7                                                                               | 0.0                                                                               | 0.2                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 1.6                                                                                 | 1.2                                                                                 | 9.3                                                                                 | 0.4                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 10.1                                                                              | 0.0                                                                               | 1.5                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 5.5                                                                                 | 2.4                                                                                 | 3.7                                                                                 | 2.6                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 35.9                                                                              | 0.0                                                                               | 20.4                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 20.9                                                                                | 18.2                                                                                | 44.8                                                                                | 9.7                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | D                                                                                 | A                                                                                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | A                                                                                  | C                                                                                   | B                                                                                   | D                                                                                   | A                                                                                   | A                                                                                   |
| Approach Vol, veh/h          | 631                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 953                                                                                |                                                                                     |                                                                                     | 745                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 33.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 20.4                                                                               |                                                                                     |                                                                                     | 17.5                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | C                                                                                  |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 14.0                                                                              | 37.0                                                                              |                                                                                   | 31.3                                                                              |                                                                                   |                                                                                   | 51.0                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                   | 4.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 14.5                                                                              | 27.5                                                                              |                                                                                   | 34.5                                                                              |                                                                                   |                                                                                   | 46.5                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 9.5                                                                               | 16.0                                                                              |                                                                                   | 24.3                                                                              |                                                                                   |                                                                                   | 9.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.2                                                                               | 4.3                                                                               |                                                                                   | 2.5                                                                               |                                                                                   |                                                                                   | 4.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 22.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

HCM 6th AWSC  
5: Campus Dr/Campus Drive & 7th Street

11/03/2020

| Intersection              |      |
|---------------------------|------|
| Intersection Delay, s/veh | 12.6 |
| Intersection LOS          | B    |

| Movement            | EBL                                                                               | EBT                                                                               | EBR  | WBL                                                                               | WBT                                                                               | WBR  | NBL  | NBT                                                                                 | NBR  | SBL  | SBT                                                                                 | SBR  |
|---------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|
| Lane Configurations |  |  |      |  |  |      |      |  |      |      |  |      |
| Traffic Vol, veh/h  | 89                                                                                | 127                                                                               | 41   | 43                                                                                | 156                                                                               | 34   | 33   | 96                                                                                  | 24   | 24   | 126                                                                                 | 36   |
| Future Vol, veh/h   | 89                                                                                | 127                                                                               | 41   | 43                                                                                | 156                                                                               | 34   | 33   | 96                                                                                  | 24   | 24   | 126                                                                                 | 36   |
| Peak Hour Factor    | 0.79                                                                              | 0.79                                                                              | 0.79 | 0.79                                                                              | 0.79                                                                              | 0.79 | 0.79 | 0.79                                                                                | 0.79 | 0.79 | 0.79                                                                                | 0.79 |
| Heavy Vehicles, %   | 3                                                                                 | 3                                                                                 | 3    | 3                                                                                 | 3                                                                                 | 3    | 3    | 3                                                                                   | 3    | 3    | 3                                                                                   | 3    |
| Mvmt Flow           | 113                                                                               | 161                                                                               | 52   | 54                                                                                | 197                                                                               | 43   | 42   | 122                                                                                 | 30   | 30   | 159                                                                                 | 46   |
| Number of Lanes     | 1                                                                                 | 1                                                                                 | 0    | 1                                                                                 | 1                                                                                 | 0    | 0    | 1                                                                                   | 0    | 0    | 1                                                                                   | 0    |

| Approach                   | EB   | WB | NB   | SB |
|----------------------------|------|----|------|----|
| Opposing Approach          | WB   | EB | SB   | NB |
| Opposing Lanes             | 2    | 2  | 1    | 1  |
| Conflicting Approach Left  | SB   | NB | EB   | WB |
| Conflicting Lanes Left     | 1    | 1  | 2    | 2  |
| Conflicting Approach Right | NB   | SB | WB   | EB |
| Conflicting Lanes Right    | 1    | 1  | 2    | 2  |
| HCM Control Delay          | 12.2 | 13 | 12.3 | 13 |
| HCM LOS                    | B    | B  | B    | B  |

| Lane                   | NBLn1 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | SBLn1 |
|------------------------|-------|-------|-------|-------|-------|-------|
| Vol Left, %            | 22%   | 100%  | 0%    | 100%  | 0%    | 13%   |
| Vol Thru, %            | 63%   | 0%    | 76%   | 0%    | 82%   | 68%   |
| Vol Right, %           | 16%   | 0%    | 24%   | 0%    | 18%   | 19%   |
| Sign Control           | Stop  | Stop  | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 153   | 89    | 168   | 43    | 190   | 186   |
| LT Vol                 | 33    | 89    | 0     | 43    | 0     | 24    |
| Through Vol            | 96    | 0     | 127   | 0     | 156   | 126   |
| RT Vol                 | 24    | 0     | 41    | 0     | 34    | 36    |
| Lane Flow Rate         | 194   | 113   | 213   | 54    | 241   | 235   |
| Geometry Grp           | 2     | 7     | 7     | 7     | 7     | 2     |
| Degree of Util (X)     | 0.33  | 0.215 | 0.366 | 0.105 | 0.42  | 0.393 |
| Departure Headway (Hd) | 6.137 | 6.877 | 6.193 | 6.92  | 6.283 | 6.006 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 581   | 519   | 576   | 515   | 570   | 593   |
| Service Time           | 4.228 | 4.657 | 3.973 | 4.701 | 4.063 | 4.092 |
| HCM Lane V/C Ratio     | 0.334 | 0.218 | 0.37  | 0.105 | 0.423 | 0.396 |
| HCM Control Delay      | 12.3  | 11.6  | 12.5  | 10.5  | 13.6  | 13    |
| HCM Lane LOS           | B     | B     | B     | B     | B     | B     |
| HCM 95th-tile Q        | 1.4   | 0.8   | 1.7   | 0.3   | 2.1   | 1.9   |



HCM 6th TWSC  
1: 12th Avenue & Glendale Avenue

11/03/2020

| Intersection               |        |                        |        |      |             |                            |        |      |      |                                |      |      |
|----------------------------|--------|------------------------|--------|------|-------------|----------------------------|--------|------|------|--------------------------------|------|------|
| Int Delay, s/veh           | 24.2   |                        |        |      |             |                            |        |      |      |                                |      |      |
| Movement                   | EBL    | EBT                    | EBR    | WBL  | WBT         | WBR                        | NBL    | NBT  | NBR  | SBL                            | SBT  | SBR  |
| Lane Configurations        |        |                        | ↰      |      |             | ↰                          |        | ↰↰↰  |      | ↰                              | ↰↰↰  |      |
| Traffic Vol, veh/h         | 0      | 0                      | 179    | 0    | 0           | 251                        | 0      | 1842 | 96   | 52                             | 2035 | 174  |
| Future Vol, veh/h          | 0      | 0                      | 179    | 0    | 0           | 251                        | 0      | 1842 | 96   | 52                             | 2035 | 174  |
| Conflicting Peds, #/hr     | 0      | 0                      | 0      | 0    | 0           | 0                          | 0      | 0    | 0    | 0                              | 0    | 0    |
| Sign Control               | Stop   | Stop                   | Stop   | Stop | Stop        | Stop                       | Free   | Free | Free | Free                           | Free | Free |
| RT Channelized             | -      | -                      | None   | -    | -           | None                       | -      | -    | None | -                              | -    | None |
| Storage Length             | -      | -                      | 0      | -    | -           | 0                          | -      | -    | -    | 125                            | -    | -    |
| Veh in Median Storage, #   | -      | 0                      | -      | -    | 0           | -                          | -      | 0    | -    | -                              | 0    | -    |
| Grade, %                   | -      | 0                      | -      | -    | 0           | -                          | -      | 0    | -    | -                              | 0    | -    |
| Peak Hour Factor           | 92     | 92                     | 92     | 92   | 92          | 92                         | 92     | 92   | 92   | 92                             | 92   | 92   |
| Heavy Vehicles, %          | 3      | 3                      | 3      | 3    | 3           | 3                          | 3      | 3    | 3    | 3                              | 3    | 3    |
| Mvmt Flow                  | 0      | 0                      | 195    | 0    | 0           | 273                        | 0      | 2002 | 104  | 57                             | 2212 | 189  |
|                            |        |                        |        |      |             |                            |        |      |      |                                |      |      |
| Major/Minor                | Minor2 |                        | Minor1 |      | Major1      |                            | Major2 |      |      |                                |      |      |
| Conflicting Flow All       | -      | -                      | 1201   | -    | -           | 1053                       | -      | 0    | 0    | 2106                           | 0    | 0    |
| Stage 1                    | -      | -                      | -      | -    | -           | -                          | -      | -    | -    | -                              | -    | -    |
| Stage 2                    | -      | -                      | -      | -    | -           | -                          | -      | -    | -    | -                              | -    | -    |
| Critical Hdwy              | -      | -                      | 7.16   | -    | -           | 7.16                       | -      | -    | -    | 5.36                           | -    | -    |
| Critical Hdwy Stg 1        | -      | -                      | -      | -    | -           | -                          | -      | -    | -    | -                              | -    | -    |
| Critical Hdwy Stg 2        | -      | -                      | -      | -    | -           | -                          | -      | -    | -    | -                              | -    | -    |
| Follow-up Hdwy             | -      | -                      | 3.93   | -    | -           | 3.93                       | -      | -    | -    | 3.13                           | -    | -    |
| Pot Cap-1 Maneuver         | 0      | 0                      | ~ 151  | 0    | 0           | ~ 190                      | 0      | -    | -    | 109                            | -    | -    |
| Stage 1                    | 0      | 0                      | -      | 0    | 0           | -                          | 0      | -    | -    | -                              | -    | -    |
| Stage 2                    | 0      | 0                      | -      | 0    | 0           | -                          | 0      | -    | -    | -                              | -    | -    |
| Platoon blocked, %         | -      | -                      | -      | -    | -           | -                          | -      | -    | -    | -                              | -    | -    |
| Mov Cap-1 Maneuver         | -      | -                      | ~ 151  | -    | -           | ~ 190                      | -      | -    | -    | 109                            | -    | -    |
| Mov Cap-2 Maneuver         | -      | -                      | -      | -    | -           | -                          | -      | -    | -    | -                              | -    | -    |
| Stage 1                    | -      | -                      | -      | -    | -           | -                          | -      | -    | -    | -                              | -    | -    |
| Stage 2                    | -      | -                      | -      | -    | -           | -                          | -      | -    | -    | -                              | -    | -    |
|                            |        |                        |        |      |             |                            |        |      |      |                                |      |      |
| Approach                   | EB     |                        | WB     |      | NB          |                            | SB     |      |      |                                |      |      |
| HCM Control Delay, s       | 228.1  |                        | 269.9  |      | 0           |                            | 1.6    |      |      |                                |      |      |
| HCM LOS                    | F      |                        | F      |      |             |                            |        |      |      |                                |      |      |
|                            |        |                        |        |      |             |                            |        |      |      |                                |      |      |
| Minor Lane/Major Mvmt      | NBT    |                        | NBR    |      | EBLn1WBLn1  |                            | SBL    | SBT  | SBR  |                                |      |      |
| Capacity (veh/h)           | -      |                        | -      |      | 151 190     |                            | 109    | -    | -    |                                |      |      |
| HCM Lane V/C Ratio         | -      |                        | -      |      | 1.289 1.436 |                            | 0.519  | -    | -    |                                |      |      |
| HCM Control Delay (s)      | -      |                        | -      |      | 228.1 269.9 |                            | 69.1   | -    | -    |                                |      |      |
| HCM Lane LOS               | -      |                        | -      |      | F F         |                            | F      | -    | -    |                                |      |      |
| HCM 95th %tile Q(veh)      | -      |                        | -      |      | 11.7 16.5   |                            | 2.4    | -    | -    |                                |      |      |
| Notes                      |        |                        |        |      |             |                            |        |      |      |                                |      |      |
| ~: Volume exceeds capacity |        | \$: Delay exceeds 300s |        |      |             | +: Computation Not Defined |        |      |      | *: All major volume in platoon |      |      |

HCM 6th TWSC  
6: Campus Dr & 6th Street

11/03/2020

| Intersection             |        |                                                                                   |        |            |                                                                                   |       |        |                                                                                   |      |       |                                                                                     |      |
|--------------------------|--------|-----------------------------------------------------------------------------------|--------|------------|-----------------------------------------------------------------------------------|-------|--------|-----------------------------------------------------------------------------------|------|-------|-------------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 4      |                                                                                   |        |            |                                                                                   |       |        |                                                                                   |      |       |                                                                                     |      |
| Movement                 | EBL    | EBT                                                                               | EBR    | WBL        | WBT                                                                               | WBR   | NBL    | NBT                                                                               | NBR  | SBL   | SBT                                                                                 | SBR  |
| Lane Configurations      |        |  |        |            |  |       |        |  |      |       |  |      |
| Traffic Vol, veh/h       | 13     | 9                                                                                 | 0      | 0          | 4                                                                                 | 75    | 0      | 146                                                                               | 0    | 66    | 79                                                                                  | 15   |
| Future Vol, veh/h        | 13     | 9                                                                                 | 0      | 0          | 4                                                                                 | 75    | 0      | 146                                                                               | 0    | 66    | 79                                                                                  | 15   |
| Conflicting Peds, #/hr   | 0      | 0                                                                                 | 0      | 0          | 0                                                                                 | 0     | 0      | 0                                                                                 | 0    | 0     | 0                                                                                   | 0    |
| Sign Control             | Stop   | Stop                                                                              | Stop   | Stop       | Stop                                                                              | Stop  | Free   | Free                                                                              | Free | Free  | Free                                                                                | Free |
| RT Channelized           | -      | -                                                                                 | None   | -          | -                                                                                 | None  | -      | -                                                                                 | None | -     | -                                                                                   | None |
| Storage Length           | -      | -                                                                                 | -      | -          | -                                                                                 | -     | -      | -                                                                                 | -    | -     | -                                                                                   | -    |
| Veh in Median Storage, # | -      | 0                                                                                 | -      | -          | 0                                                                                 | -     | -      | 0                                                                                 | -    | -     | 0                                                                                   | -    |
| Grade, %                 | -      | 0                                                                                 | -      | -          | 0                                                                                 | -     | -      | 0                                                                                 | -    | -     | 0                                                                                   | -    |
| Peak Hour Factor         | 78     | 78                                                                                | 78     | 78         | 78                                                                                | 78    | 78     | 78                                                                                | 78   | 78    | 78                                                                                  | 78   |
| Heavy Vehicles, %        | 3      | 3                                                                                 | 3      | 3          | 3                                                                                 | 3     | 3      | 3                                                                                 | 3    | 3     | 3                                                                                   | 3    |
| Mvmt Flow                | 17     | 12                                                                                | 0      | 0          | 5                                                                                 | 96    | 0      | 187                                                                               | 0    | 85    | 101                                                                                 | 19   |
|                          |        |                                                                                   |        |            |                                                                                   |       |        |                                                                                   |      |       |                                                                                     |      |
| Major/Minor              | Minor2 |                                                                                   | Minor1 |            | Major1                                                                            |       | Major2 |                                                                                   |      |       |                                                                                     |      |
| Conflicting Flow All     | 519    | 468                                                                               | 111    | 474        | 477                                                                               | 187   | 120    | 0                                                                                 | 0    | 187   | 0                                                                                   | 0    |
| Stage 1                  | 281    | 281                                                                               | -      | 187        | 187                                                                               | -     | -      | -                                                                                 | -    | -     | -                                                                                   | -    |
| Stage 2                  | 238    | 187                                                                               | -      | 287        | 290                                                                               | -     | -      | -                                                                                 | -    | -     | -                                                                                   | -    |
| Critical Hdwy            | 7.13   | 6.53                                                                              | 6.23   | 7.13       | 6.53                                                                              | 6.23  | 4.13   | -                                                                                 | -    | 4.13  | -                                                                                   | -    |
| Critical Hdwy Stg 1      | 6.13   | 5.53                                                                              | -      | 6.13       | 5.53                                                                              | -     | -      | -                                                                                 | -    | -     | -                                                                                   | -    |
| Critical Hdwy Stg 2      | 6.13   | 5.53                                                                              | -      | 6.13       | 5.53                                                                              | -     | -      | -                                                                                 | -    | -     | -                                                                                   | -    |
| Follow-up Hdwy           | 3.527  | 4.027                                                                             | 3.327  | 3.527      | 4.027                                                                             | 3.327 | 2.227  | -                                                                                 | -    | 2.227 | -                                                                                   | -    |
| Pot Cap-1 Maneuver       | 466    | 491                                                                               | 940    | 499        | 486                                                                               | 852   | 1462   | -                                                                                 | -    | 1381  | -                                                                                   | -    |
| Stage 1                  | 724    | 677                                                                               | -      | 812        | 743                                                                               | -     | -      | -                                                                                 | -    | -     | -                                                                                   | -    |
| Stage 2                  | 763    | 743                                                                               | -      | 718        | 670                                                                               | -     | -      | -                                                                                 | -    | -     | -                                                                                   | -    |
| Platoon blocked, %       |        |                                                                                   |        |            |                                                                                   |       |        | -                                                                                 | -    |       | -                                                                                   | -    |
| Mov Cap-1 Maneuver       | 389    | 459                                                                               | 940    | 465        | 454                                                                               | 852   | 1462   | -                                                                                 | -    | 1381  | -                                                                                   | -    |
| Mov Cap-2 Maneuver       | 389    | 459                                                                               | -      | 465        | 454                                                                               | -     | -      | -                                                                                 | -    | -     | -                                                                                   | -    |
| Stage 1                  | 724    | 632                                                                               | -      | 812        | 743                                                                               | -     | -      | -                                                                                 | -    | -     | -                                                                                   | -    |
| Stage 2                  | 672    | 743                                                                               | -      | 658        | 626                                                                               | -     | -      | -                                                                                 | -    | -     | -                                                                                   | -    |
|                          |        |                                                                                   |        |            |                                                                                   |       |        |                                                                                   |      |       |                                                                                     |      |
|                          |        |                                                                                   |        |            |                                                                                   |       |        |                                                                                   |      |       |                                                                                     |      |
| Approach                 | EB     |                                                                                   | WB     |            | NB                                                                                |       | SB     |                                                                                   |      |       |                                                                                     |      |
| HCM Control Delay, s     | 14.3   |                                                                                   | 10     |            | 0                                                                                 |       | 3.2    |                                                                                   |      |       |                                                                                     |      |
| HCM LOS                  | B      |                                                                                   | B      |            |                                                                                   |       |        |                                                                                   |      |       |                                                                                     |      |
|                          |        |                                                                                   |        |            |                                                                                   |       |        |                                                                                   |      |       |                                                                                     |      |
| Minor Lane/Major Mvmt    | NBL    | NBT                                                                               | NBR    | EBLn1WBLn1 | SBL                                                                               | SBT   | SBR    |                                                                                   |      |       |                                                                                     |      |
| Capacity (veh/h)         | 1462   | -                                                                                 | -      | 415        | 816                                                                               | 1381  | -      | -                                                                                 |      |       |                                                                                     |      |
| HCM Lane V/C Ratio       | -      | -                                                                                 | -      | 0.068      | 0.124                                                                             | 0.061 | -      | -                                                                                 |      |       |                                                                                     |      |
| HCM Control Delay (s)    | 0      | -                                                                                 | -      | 14.3       | 10                                                                                | 7.8   | 0      | -                                                                                 |      |       |                                                                                     |      |
| HCM Lane LOS             | A      | -                                                                                 | -      | B          | B                                                                                 | A     | A      | -                                                                                 |      |       |                                                                                     |      |
| HCM 95th %tile Q(veh)    | 0      | -                                                                                 | -      | 0.2        | 0.4                                                                               | 0.2   | -      | -                                                                                 |      |       |                                                                                     |      |

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 2.6  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      |      | ↗    |      |      | ↗    | ↗    | ↗↘   |      | ↗    | ↗↘   |      |
| Traffic Vol, veh/h       | 0    | 0    | 74   | 0    | 0    | 174  | 106  | 1154 | 114  | 116  | 1201 | 9    |
| Future Vol, veh/h        | 0    | 0    | 74   | 0    | 0    | 174  | 106  | 1154 | 114  | 116  | 1201 | 9    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | 0    | -    | -    | 0    | 75   | -    | -    | 125  | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 97   | 97   | 97   | 97   | 97   | 97   | 97   | 97   | 97   | 97   | 97   | 97   |
| Heavy Vehicles, %        | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    |
| Mvmt Flow                | 0    | 0    | 76   | 0    | 0    | 179  | 109  | 1190 | 118  | 120  | 1238 | 9    |

| Major/Minor          | Minor2 |   | Minor1 |   | Major1 |      | Major2 |   |   |      |   |   |
|----------------------|--------|---|--------|---|--------|------|--------|---|---|------|---|---|
| Conflicting Flow All | -      | - | 624    | - | -      | 654  | 1247   | 0 | 0 | 1308 | 0 | 0 |
| Stage 1              | -      | - | -      | - | -      | -    | -      | - | - | -    | - | - |
| Stage 2              | -      | - | -      | - | -      | -    | -      | - | - | -    | - | - |
| Critical Hdwy        | -      | - | 6.96   | - | -      | 6.96 | 4.16   | - | - | 4.16 | - | - |
| Critical Hdwy Stg 1  | -      | - | -      | - | -      | -    | -      | - | - | -    | - | - |
| Critical Hdwy Stg 2  | -      | - | -      | - | -      | -    | -      | - | - | -    | - | - |
| Follow-up Hdwy       | -      | - | 3.33   | - | -      | 3.33 | 2.23   | - | - | 2.23 | - | - |
| Pot Cap-1 Maneuver   | 0      | 0 | 426    | 0 | 0      | 407  | 549    | - | - | 520  | - | - |
| Stage 1              | 0      | 0 | -      | 0 | 0      | -    | -      | - | - | -    | - | - |
| Stage 2              | 0      | 0 | -      | 0 | 0      | -    | -      | - | - | -    | - | - |
| Platoon blocked, %   | -      | - | -      | - | -      | -    | -      | - | - | -    | - | - |
| Mov Cap-1 Maneuver   | -      | - | 426    | - | -      | 407  | 549    | - | - | 520  | - | - |
| Mov Cap-2 Maneuver   | -      | - | -      | - | -      | -    | -      | - | - | -    | - | - |
| Stage 1              | -      | - | -      | - | -      | -    | -      | - | - | -    | - | - |
| Stage 2              | -      | - | -      | - | -      | -    | -      | - | - | -    | - | - |

| Approach             | EB   |  | WB   |  | NB |  | SB  |  |
|----------------------|------|--|------|--|----|--|-----|--|
| HCM Control Delay, s | 15.3 |  | 20.6 |  | 1  |  | 1.2 |  |
| HCM LOS              | C    |  | C    |  |    |  |     |  |

| Minor Lane/Major Mvmt | NBL   | NBT | NBR | EBLn1WBLn1 | SBL   | SBT  | SBR |
|-----------------------|-------|-----|-----|------------|-------|------|-----|
| Capacity (veh/h)      | 549   | -   | -   | 426        | 407   | 520  | -   |
| HCM Lane V/C Ratio    | 0.199 | -   | -   | 0.179      | 0.441 | 0.23 | -   |
| HCM Control Delay (s) | 13.2  | -   | -   | 15.3       | 20.6  | 14   | -   |
| HCM Lane LOS          | B     | -   | -   | C          | C     | B    | -   |
| HCM 95th %tile Q(veh) | 0.7   | -   | -   | 0.6        | 2.2   | 0.9  | -   |

# HCM 6th Signalized Intersection Summary

## 2: SR 198 WB Ramps & 12th Avenue

11/03/2020

|                              |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | WBL                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                                 | SBR                                                                                 | NEL                                                                                 | NER                                                                                 |
| Lane Configurations          |  |  |  |  |                                                                                   |                                                                                   |  |  |                                                                                     |                                                                                     |
| Traffic Volume (veh/h)       | 155                                                                               | 597                                                                               | 50                                                                                | 1345                                                                              | 0                                                                                 | 0                                                                                 | 1437                                                                                | 783                                                                                 | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 155                                                                               | 597                                                                               | 50                                                                                | 1345                                                                              | 0                                                                                 | 0                                                                                 | 1437                                                                                | 783                                                                                 | 0                                                                                   | 0                                                                                   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 0                                                                                 | 0                                                                                 | 1856                                                                                | 1856                                                                                |                                                                                     |                                                                                     |
| Adj Flow Rate, veh/h         | 168                                                                               | 649                                                                               | 54                                                                                | 1462                                                                              | 0                                                                                 | 0                                                                                 | 1562                                                                                | 851                                                                                 |                                                                                     |                                                                                     |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                |                                                                                     |                                                                                     |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 3                                                                                   | 3                                                                                   |                                                                                     |                                                                                     |
| Cap, veh/h                   | 413                                                                               | 735                                                                               | 74                                                                                | 2341                                                                              | 0                                                                                 | 0                                                                                 | 2014                                                                                | 898                                                                                 |                                                                                     |                                                                                     |
| Arrive On Green              | 0.23                                                                              | 0.23                                                                              | 0.04                                                                              | 0.66                                                                              | 0.00                                                                              | 0.00                                                                              | 0.57                                                                                | 0.57                                                                                |                                                                                     |                                                                                     |
| Sat Flow, veh/h              | 1767                                                                              | 3145                                                                              | 1767                                                                              | 3618                                                                              | 0                                                                                 | 0                                                                                 | 3618                                                                                | 1572                                                                                |                                                                                     |                                                                                     |
| Grp Volume(v), veh/h         | 168                                                                               | 649                                                                               | 54                                                                                | 1462                                                                              | 0                                                                                 | 0                                                                                 | 1562                                                                                | 851                                                                                 |                                                                                     |                                                                                     |
| Grp Sat Flow(s),veh/h/ln     | 1767                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 0                                                                                 | 0                                                                                 | 1763                                                                                | 1572                                                                                |                                                                                     |                                                                                     |
| Q Serve(g_s), s              | 7.1                                                                               | 17.6                                                                              | 2.7                                                                               | 21.0                                                                              | 0.0                                                                               | 0.0                                                                               | 30.0                                                                                | 44.5                                                                                |                                                                                     |                                                                                     |
| Cycle Q Clear(g_c), s        | 7.1                                                                               | 17.6                                                                              | 2.7                                                                               | 21.0                                                                              | 0.0                                                                               | 0.0                                                                               | 30.0                                                                                | 44.5                                                                                |                                                                                     |                                                                                     |
| Prop In Lane                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 0.00                                                                              |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |
| Lane Grp Cap(c), veh/h       | 413                                                                               | 735                                                                               | 74                                                                                | 2341                                                                              | 0                                                                                 | 0                                                                                 | 2014                                                                                | 898                                                                                 |                                                                                     |                                                                                     |
| V/C Ratio(X)                 | 0.41                                                                              | 0.88                                                                              | 0.73                                                                              | 0.62                                                                              | 0.00                                                                              | 0.00                                                                              | 0.78                                                                                | 0.95                                                                                |                                                                                     |                                                                                     |
| Avail Cap(c_a), veh/h        | 451                                                                               | 803                                                                               | 110                                                                               | 2341                                                                              | 0                                                                                 | 0                                                                                 | 2014                                                                                | 898                                                                                 |                                                                                     |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Uniform Delay (d), s/veh     | 28.6                                                                              | 32.6                                                                              | 41.7                                                                              | 8.5                                                                               | 0.0                                                                               | 0.0                                                                               | 14.5                                                                                | 17.6                                                                                |                                                                                     |                                                                                     |
| Incr Delay (d2), s/veh       | 0.6                                                                               | 10.7                                                                              | 13.2                                                                              | 1.3                                                                               | 0.0                                                                               | 0.0                                                                               | 3.0                                                                                 | 19.7                                                                                |                                                                                     |                                                                                     |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |
| %ile BackOfQ(50%),veh/ln     | 2.9                                                                               | 7.3                                                                               | 1.4                                                                               | 6.5                                                                               | 0.0                                                                               | 0.0                                                                               | 10.9                                                                                | 18.2                                                                                |                                                                                     |                                                                                     |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 29.2                                                                              | 43.3                                                                              | 54.9                                                                              | 9.8                                                                               | 0.0                                                                               | 0.0                                                                               | 17.5                                                                                | 37.3                                                                                |                                                                                     |                                                                                     |
| LnGrp LOS                    | C                                                                                 | D                                                                                 | D                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 | B                                                                                   | D                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          | 817                                                                               |                                                                                   |                                                                                   | 1516                                                                              |                                                                                   |                                                                                   | 2413                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 40.4                                                                              |                                                                                   |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                   | 24.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | D                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 2                                                                                 |                                                                                   | 5                                                                                 |                                                                                   | 6                                                                                 |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 63.0                                                                              |                                                                                   | 8.2                                                                               |                                                                                   | 54.8                                                                              |                                                                                   | 25.1                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 58.5                                                                              |                                                                                   | 5.5                                                                               |                                                                                   | 48.5                                                                              |                                                                                   | 22.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 23.0                                                                              |                                                                                   | 4.7                                                                               |                                                                                   | 46.5                                                                              |                                                                                   | 19.6                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 14.1                                                                              |                                                                                   | 0.0                                                                               |                                                                                   | 1.8                                                                               |                                                                                   | 1.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 23.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary 3: 12th Avenue & SR 198 EB Off Ramps

11/03/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                    |  |  |                                                                                     |  |  |
| Traffic Volume (veh/h)       | 657                                                                               | 0                                                                                 | 53                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 727                                                                                 | 155                                                                                 | 0                                                                                   | 978                                                                                 | 624                                                                                 |
| Future Volume (veh/h)        | 657                                                                               | 0                                                                                 | 53                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 727                                                                                 | 155                                                                                 | 0                                                                                   | 978                                                                                 | 624                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                 |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 0                                                                                 | 1856                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1856                                                                                | 1856                                                                                | 0                                                                                   | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 706                                                                               | 0                                                                                 | 57                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 782                                                                                 | 0                                                                                   | 0                                                                                   | 1052                                                                                | 0                                                                                   |
| Peak Hour Factor             | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.93                                                                               | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 0                                                                                 | 3                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 3                                                                                   | 3                                                                                   | 0                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 857                                                                               | 0                                                                                 | 393                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 2245                                                                                |                                                                                     | 0                                                                                   | 2245                                                                                |                                                                                     |
| Arrive On Green              | 0.25                                                                              | 0.00                                                                              | 0.25                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.64                                                                                | 0.00                                                                                | 0.00                                                                                | 0.64                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 3428                                                                              | 0                                                                                 | 1572                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 3618                                                                                | 1572                                                                                | 0                                                                                   | 3618                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 706                                                                               | 0                                                                                 | 57                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 782                                                                                 | 0                                                                                   | 0                                                                                   | 1052                                                                                | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1714                                                                              | 0                                                                                 | 1572                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1763                                                                                | 1572                                                                                | 0                                                                                   | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 15.4                                                                              | 0.0                                                                               | 2.2                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 8.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 12.3                                                                                | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 15.4                                                                              | 0.0                                                                               | 2.2                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 8.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 12.3                                                                                | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               |                                                                                     | 1.00                                                                                | 0.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 857                                                                               | 0                                                                                 | 393                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 2245                                                                                |                                                                                     | 0                                                                                   | 2245                                                                                |                                                                                     |
| V/C Ratio(X)                 | 0.82                                                                              | 0.00                                                                              | 0.15                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.35                                                                                |                                                                                     | 0.00                                                                                | 0.47                                                                                |                                                                                     |
| Avail Cap(c_a), veh/h        | 1318                                                                              | 0                                                                                 | 605                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 2245                                                                                |                                                                                     | 0                                                                                   | 2245                                                                                |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 28.1                                                                              | 0.0                                                                               | 23.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 6.7                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 7.5                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 2.6                                                                               | 0.0                                                                               | 0.2                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 0.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.7                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 6.1                                                                               | 0.0                                                                               | 0.8                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 2.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 3.7                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 30.7                                                                              | 0.0                                                                               | 23.3                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 7.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 8.2                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | A                                                                                  | A                                                                                   |                                                                                     | A                                                                                   | A                                                                                   |                                                                                     |
| Approach Vol, veh/h          | 763                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 782                                                                                |                                                                                     |                                                                                     | 1052                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 30.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 7.2                                                                                |                                                                                     |                                                                                     | 8.2                                                                                 |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | A                                                                                  |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 55.0                                                                              |                                                                                   |                                                                                   | 24.3                                                                              |                                                                                   |                                                                                   | 55.0                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               |                                                                                   |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                   | 4.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 50.5                                                                              |                                                                                   |                                                                                   | 30.5                                                                              |                                                                                   |                                                                                   | 50.5                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 10.2                                                                              |                                                                                   |                                                                                   | 17.4                                                                              |                                                                                   |                                                                                   | 14.3                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 5.9                                                                               |                                                                                   |                                                                                   | 2.4                                                                               |                                                                                   |                                                                                   | 8.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 14.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 4: Campus Drive & Lacey Boulevard

11/03/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 32                                                                                | 801                                                                               | 62                                                                                | 82                                                                                | 888                                                                               | 47                                                                                | 87                                                                                  | 74                                                                                  | 176                                                                                 | 108                                                                                 | 93                                                                                  | 37                                                                                  |
| Future Volume (veh/h)        | 32                                                                                | 801                                                                               | 62                                                                                | 82                                                                                | 888                                                                               | 47                                                                                | 87                                                                                  | 74                                                                                  | 176                                                                                 | 108                                                                                 | 93                                                                                  | 37                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 37                                                                                | 921                                                                               | 71                                                                                | 94                                                                                | 1021                                                                              | 54                                                                                | 100                                                                                 | 85                                                                                  | 202                                                                                 | 124                                                                                 | 107                                                                                 | 43                                                                                  |
| Peak Hour Factor             | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                                | 0.87                                                                                | 0.87                                                                                | 0.87                                                                                | 0.87                                                                                | 0.87                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 62                                                                                | 1086                                                                              | 484                                                                               | 120                                                                               | 1203                                                                              | 537                                                                               | 128                                                                                 | 153                                                                                 | 364                                                                                 | 157                                                                                 | 612                                                                                 | 519                                                                                 |
| Arrive On Green              | 0.03                                                                              | 0.31                                                                              | 0.31                                                                              | 0.07                                                                              | 0.34                                                                              | 0.34                                                                              | 0.07                                                                                | 0.31                                                                                | 0.31                                                                                | 0.09                                                                                | 0.33                                                                                | 0.33                                                                                |
| Sat Flow, veh/h              | 1767                                                                              | 3526                                                                              | 1572                                                                              | 1767                                                                              | 3526                                                                              | 1572                                                                              | 1767                                                                                | 488                                                                                 | 1159                                                                                | 1767                                                                                | 1856                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 37                                                                                | 921                                                                               | 71                                                                                | 94                                                                                | 1021                                                                              | 54                                                                                | 100                                                                                 | 0                                                                                   | 287                                                                                 | 124                                                                                 | 107                                                                                 | 43                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1767                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                                | 0                                                                                   | 1647                                                                                | 1767                                                                                | 1856                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 1.7                                                                               | 19.9                                                                              | 2.7                                                                               | 4.3                                                                               | 21.8                                                                              | 1.9                                                                               | 4.5                                                                                 | 0.0                                                                                 | 11.8                                                                                | 5.6                                                                                 | 3.3                                                                                 | 1.5                                                                                 |
| Cycle Q Clear(g_c), s        | 1.7                                                                               | 19.9                                                                              | 2.7                                                                               | 4.3                                                                               | 21.8                                                                              | 1.9                                                                               | 4.5                                                                                 | 0.0                                                                                 | 11.8                                                                                | 5.6                                                                                 | 3.3                                                                                 | 1.5                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 0.70                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 62                                                                                | 1086                                                                              | 484                                                                               | 120                                                                               | 1203                                                                              | 537                                                                               | 128                                                                                 | 0                                                                                   | 517                                                                                 | 157                                                                                 | 612                                                                                 | 519                                                                                 |
| V/C Ratio(X)                 | 0.60                                                                              | 0.85                                                                              | 0.15                                                                              | 0.78                                                                              | 0.85                                                                              | 0.10                                                                              | 0.78                                                                                | 0.00                                                                                | 0.56                                                                                | 0.79                                                                                | 0.17                                                                                | 0.08                                                                                |
| Avail Cap(c_a), veh/h        | 109                                                                               | 1193                                                                              | 532                                                                               | 185                                                                               | 1345                                                                              | 600                                                                               | 228                                                                                 | 0                                                                                   | 517                                                                                 | 228                                                                                 | 612                                                                                 | 519                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 38.7                                                                              | 26.3                                                                              | 20.4                                                                              | 37.3                                                                              | 24.8                                                                              | 18.3                                                                              | 37.0                                                                                | 0.0                                                                                 | 23.2                                                                                | 36.3                                                                                | 19.4                                                                                | 18.8                                                                                |
| Incr Delay (d2), s/veh       | 9.1                                                                               | 5.5                                                                               | 0.1                                                                               | 11.0                                                                              | 4.9                                                                               | 0.1                                                                               | 9.7                                                                                 | 0.0                                                                                 | 4.3                                                                                 | 11.1                                                                                | 0.6                                                                                 | 0.3                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.9                                                                               | 8.6                                                                               | 0.9                                                                               | 2.1                                                                               | 9.3                                                                               | 0.7                                                                               | 2.3                                                                                 | 0.0                                                                                 | 5.0                                                                                 | 2.8                                                                                 | 1.5                                                                                 | 0.6                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 47.7                                                                              | 31.9                                                                              | 20.5                                                                              | 48.2                                                                              | 29.7                                                                              | 18.3                                                                              | 46.8                                                                                | 0.0                                                                                 | 27.4                                                                                | 47.4                                                                                | 20.0                                                                                | 19.1                                                                                |
| LnGrp LOS                    | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 | B                                                                                 | D                                                                                   | A                                                                                   | C                                                                                   | D                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 1029                                                                              |                                                                                   |                                                                                   | 1169                                                                              |                                                                                   |                                                                                     | 387                                                                                 |                                                                                     |                                                                                     | 274                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 31.6                                                                              |                                                                                   |                                                                                   | 30.7                                                                              |                                                                                   |                                                                                     | 32.4                                                                                |                                                                                     |                                                                                     | 32.3                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 11.7                                                                              | 30.0                                                                              | 10.0                                                                              | 29.5                                                                              | 10.4                                                                              | 31.3                                                                              | 7.3                                                                                 | 32.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 10.5                                                                              | 25.5                                                                              | 8.5                                                                               | 27.5                                                                              | 10.5                                                                              | 25.5                                                                              | 5.0                                                                                 | 31.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 7.6                                                                               | 13.8                                                                              | 6.3                                                                               | 21.9                                                                              | 6.5                                                                               | 5.3                                                                               | 3.7                                                                                 | 23.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 1.4                                                                               | 0.0                                                                               | 3.0                                                                               | 0.1                                                                               | 0.6                                                                               | 0.0                                                                                 | 3.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 31.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 7: 11th Avenue & Lacey Boulevard

11/03/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |   |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)       | 274                                                                               | 314                                                                               | 231                                                                               | 119                                                                               | 342                                                                               | 92                                                                                | 331                                                                                 | 732                                                                                 | 62                                                                                  | 100                                                                                 | 623                                                                                 | 114                                                                                 |
| Future Volume (veh/h)        | 274                                                                               | 314                                                                               | 231                                                                               | 119                                                                               | 342                                                                               | 92                                                                                | 331                                                                                 | 732                                                                                 | 62                                                                                  | 100                                                                                 | 623                                                                                 | 114                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 301                                                                               | 345                                                                               | 254                                                                               | 131                                                                               | 376                                                                               | 101                                                                               | 364                                                                                 | 804                                                                                 | 68                                                                                  | 110                                                                                 | 685                                                                                 | 125                                                                                 |
| Peak Hour Factor             | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 354                                                                               | 742                                                                               | 331                                                                               | 165                                                                               | 552                                                                               | 147                                                                               | 420                                                                                 | 1267                                                                                | 107                                                                                 | 140                                                                                 | 1205                                                                                | 537                                                                                 |
| Arrive On Green              | 0.10                                                                              | 0.21                                                                              | 0.21                                                                              | 0.09                                                                              | 0.20                                                                              | 0.20                                                                              | 0.12                                                                                | 0.39                                                                                | 0.39                                                                                | 0.08                                                                                | 0.34                                                                                | 0.34                                                                                |
| Sat Flow, veh/h              | 3428                                                                              | 3526                                                                              | 1572                                                                              | 1767                                                                              | 2755                                                                              | 731                                                                               | 3428                                                                                | 3290                                                                                | 278                                                                                 | 1767                                                                                | 3526                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 301                                                                               | 345                                                                               | 254                                                                               | 131                                                                               | 239                                                                               | 238                                                                               | 364                                                                                 | 431                                                                                 | 441                                                                                 | 110                                                                                 | 685                                                                                 | 125                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1714                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 1724                                                                              | 1714                                                                                | 1763                                                                                | 1805                                                                                | 1767                                                                                | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 6.7                                                                               | 6.6                                                                               | 11.8                                                                              | 5.6                                                                               | 9.7                                                                               | 9.9                                                                               | 8.1                                                                                 | 15.4                                                                                | 15.4                                                                                | 4.7                                                                                 | 12.3                                                                                | 2.9                                                                                 |
| Cycle Q Clear(g_c), s        | 6.7                                                                               | 6.6                                                                               | 11.8                                                                              | 5.6                                                                               | 9.7                                                                               | 9.9                                                                               | 8.1                                                                                 | 15.4                                                                                | 15.4                                                                                | 4.7                                                                                 | 12.3                                                                                | 2.9                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.42                                                                              | 1.00                                                                                |                                                                                     | 0.15                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 354                                                                               | 742                                                                               | 331                                                                               | 165                                                                               | 353                                                                               | 345                                                                               | 420                                                                                 | 679                                                                                 | 695                                                                                 | 140                                                                                 | 1205                                                                                | 537                                                                                 |
| V/C Ratio(X)                 | 0.85                                                                              | 0.47                                                                              | 0.77                                                                              | 0.80                                                                              | 0.68                                                                              | 0.69                                                                              | 0.87                                                                                | 0.63                                                                                | 0.63                                                                                | 0.79                                                                                | 0.57                                                                                | 0.23                                                                                |
| Avail Cap(c_a), veh/h        | 354                                                                               | 1214                                                                              | 542                                                                               | 212                                                                               | 637                                                                               | 623                                                                               | 420                                                                                 | 679                                                                                 | 695                                                                                 | 194                                                                                 | 1205                                                                                | 537                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 34.2                                                                              | 26.8                                                                              | 28.8                                                                              | 34.4                                                                              | 28.7                                                                              | 28.8                                                                              | 33.4                                                                                | 19.4                                                                                | 19.4                                                                                | 35.0                                                                                | 20.8                                                                                | 8.1                                                                                 |
| Incr Delay (d2), s/veh       | 17.6                                                                              | 0.5                                                                               | 3.7                                                                               | 14.8                                                                              | 2.3                                                                               | 2.5                                                                               | 17.1                                                                                | 4.5                                                                                 | 4.4                                                                                 | 13.3                                                                                | 1.9                                                                                 | 1.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 3.5                                                                               | 2.7                                                                               | 4.5                                                                               | 3.0                                                                               | 4.1                                                                               | 4.1                                                                               | 4.2                                                                                 | 6.6                                                                                 | 6.8                                                                                 | 2.5                                                                                 | 5.0                                                                                 | 1.6                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 51.8                                                                              | 27.2                                                                              | 32.6                                                                              | 49.2                                                                              | 30.9                                                                              | 31.2                                                                              | 50.5                                                                                | 23.9                                                                                | 23.8                                                                                | 48.4                                                                                | 22.8                                                                                | 9.1                                                                                 |
| LnGrp LOS                    | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                   | C                                                                                   | C                                                                                   | D                                                                                   | C                                                                                   | A                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 900                                                                               |                                                                                   |                                                                                   | 608                                                                               |                                                                                   |                                                                                     | 1236                                                                                |                                                                                     |                                                                                     | 920                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 37.0                                                                              |                                                                                   |                                                                                   | 35.0                                                                              |                                                                                   |                                                                                     | 31.7                                                                                |                                                                                     |                                                                                     | 24.0                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 10.6                                                                              | 34.4                                                                              | 11.7                                                                              | 20.8                                                                              | 14.0                                                                              | 31.0                                                                              | 12.5                                                                                | 20.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 8.5                                                                               | 27.5                                                                              | 9.3                                                                               | 26.7                                                                              | 9.5                                                                               | 26.5                                                                              | 8.0                                                                                 | 28.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 6.7                                                                               | 17.4                                                                              | 7.6                                                                               | 13.8                                                                              | 10.1                                                                              | 14.3                                                                              | 8.7                                                                                 | 11.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 3.8                                                                               | 0.0                                                                               | 2.5                                                                               | 0.0                                                                               | 4.0                                                                               | 0.0                                                                                 | 2.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 31.6                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# HCM 6th Signalized Intersection Summary

## 8: 11th Avenue & 7th Street

11/03/2020

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 73                                                                                | 215                                                                               | 237                                                                               | 176                                                                               | 188                                                                               | 118                                                                               | 181                                                                                 | 679                                                                                 | 124                                                                                 | 120                                                                                 | 623                                                                                 | 56                                                                                  |
| Future Volume (veh/h)        | 73                                                                                | 215                                                                               | 237                                                                               | 176                                                                               | 188                                                                               | 118                                                                               | 181                                                                                 | 679                                                                                 | 124                                                                                 | 120                                                                                 | 623                                                                                 | 56                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 80                                                                                | 236                                                                               | 260                                                                               | 193                                                                               | 207                                                                               | 130                                                                               | 199                                                                                 | 746                                                                                 | 136                                                                                 | 132                                                                                 | 685                                                                                 | 62                                                                                  |
| Peak Hour Factor             | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 177                                                                               | 369                                                                               | 330                                                                               | 223                                                                               | 601                                                                               | 361                                                                               | 229                                                                                 | 1230                                                                                | 548                                                                                 | 165                                                                                 | 1102                                                                                | 491                                                                                 |
| Arrive On Green              | 0.05                                                                              | 0.21                                                                              | 0.21                                                                              | 0.13                                                                              | 0.28                                                                              | 0.28                                                                              | 0.13                                                                                | 0.35                                                                                | 0.35                                                                                | 0.09                                                                                | 0.31                                                                                | 0.31                                                                                |
| Sat Flow, veh/h              | 3428                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                              | 2118                                                                              | 1272                                                                              | 1767                                                                                | 3526                                                                                | 1572                                                                                | 1767                                                                                | 3526                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 80                                                                                | 236                                                                               | 260                                                                               | 193                                                                               | 171                                                                               | 166                                                                               | 199                                                                                 | 746                                                                                 | 136                                                                                 | 132                                                                                 | 685                                                                                 | 62                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1714                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 1627                                                                              | 1767                                                                                | 1763                                                                                | 1572                                                                                | 1767                                                                                | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 1.8                                                                               | 9.9                                                                               | 12.7                                                                              | 8.7                                                                               | 6.2                                                                               | 6.6                                                                               | 8.9                                                                                 | 14.2                                                                                | 3.2                                                                                 | 5.9                                                                                 | 13.4                                                                                | 2.3                                                                                 |
| Cycle Q Clear(g_c), s        | 1.8                                                                               | 9.9                                                                               | 12.7                                                                              | 8.7                                                                               | 6.2                                                                               | 6.6                                                                               | 8.9                                                                                 | 14.2                                                                                | 3.2                                                                                 | 5.9                                                                                 | 13.4                                                                                | 2.3                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.78                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 177                                                                               | 369                                                                               | 330                                                                               | 223                                                                               | 501                                                                               | 462                                                                               | 229                                                                                 | 1230                                                                                | 548                                                                                 | 165                                                                                 | 1102                                                                                | 491                                                                                 |
| V/C Ratio(X)                 | 0.45                                                                              | 0.64                                                                              | 0.79                                                                              | 0.87                                                                              | 0.34                                                                              | 0.36                                                                              | 0.87                                                                                | 0.61                                                                                | 0.25                                                                                | 0.80                                                                                | 0.62                                                                                | 0.13                                                                                |
| Avail Cap(c_a), veh/h        | 224                                                                               | 566                                                                               | 505                                                                               | 223                                                                               | 673                                                                               | 621                                                                               | 229                                                                                 | 1230                                                                                | 548                                                                                 | 205                                                                                 | 1102                                                                                | 491                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 37.3                                                                              | 29.2                                                                              | 30.3                                                                              | 34.7                                                                              | 23.0                                                                              | 23.1                                                                              | 34.6                                                                                | 21.8                                                                                | 7.6                                                                                 | 36.0                                                                                | 23.8                                                                                | 19.9                                                                                |
| Incr Delay (d2), s/veh       | 1.8                                                                               | 1.8                                                                               | 4.7                                                                               | 28.3                                                                              | 0.4                                                                               | 0.5                                                                               | 27.9                                                                                | 2.2                                                                                 | 1.1                                                                                 | 16.3                                                                                | 2.6                                                                                 | 0.5                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.8                                                                               | 4.2                                                                               | 5.0                                                                               | 5.4                                                                               | 2.6                                                                               | 2.6                                                                               | 5.5                                                                                 | 5.8                                                                                 | 1.9                                                                                 | 3.2                                                                                 | 5.7                                                                                 | 0.9                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 39.1                                                                              | 31.0                                                                              | 35.0                                                                              | 63.0                                                                              | 23.4                                                                              | 23.6                                                                              | 62.5                                                                                | 24.0                                                                                | 8.7                                                                                 | 52.3                                                                                | 26.4                                                                                | 20.5                                                                                |
| LnGrp LOS                    | D                                                                                 | C                                                                                 | C                                                                                 | E                                                                                 | C                                                                                 | C                                                                                 | E                                                                                   | C                                                                                   | A                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 576                                                                               |                                                                                   |                                                                                   | 530                                                                               |                                                                                   |                                                                                   | 1081                                                                                |                                                                                     |                                                                                     | 879                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 33.9                                                                              |                                                                                   |                                                                                   | 37.9                                                                              |                                                                                   |                                                                                   | 29.2                                                                                |                                                                                     |                                                                                     | 29.9                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 12.1                                                                              | 32.7                                                                              | 14.7                                                                              | 21.5                                                                              | 15.0                                                                              | 29.8                                                                              | 8.7                                                                                 | 27.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 9.4                                                                               | 26.4                                                                              | 10.2                                                                              | 26.0                                                                              | 10.5                                                                              | 25.3                                                                              | 5.3                                                                                 | 30.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 7.9                                                                               | 16.2                                                                              | 10.7                                                                              | 14.7                                                                              | 10.9                                                                              | 15.4                                                                              | 3.8                                                                                 | 8.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 3.9                                                                               | 0.0                                                                               | 2.3                                                                               | 0.0                                                                               | 3.3                                                                               | 0.0                                                                                 | 2.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 31.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary 10: 11th Avenue & 5th Street

11/03/2020

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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |                                                                                   |  |                                                                                   |  |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)       | 198                                                                               | 0                                                                                 | 191                                                                               | 11                                                                                | 0                                                                                 | 11                                                                                | 252                                                                                 | 1159                                                                                | 3                                                                                   | 9                                                                                   | 1097                                                                                | 158                                                                                 |
| Future Volume (veh/h)        | 198                                                                               | 0                                                                                 | 191                                                                               | 11                                                                                | 0                                                                                 | 11                                                                                | 252                                                                                 | 1159                                                                                | 3                                                                                   | 9                                                                                   | 1097                                                                                | 158                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 204                                                                               | 0                                                                                 | 197                                                                               | 11                                                                                | 0                                                                                 | 11                                                                                | 260                                                                                 | 1195                                                                                | 3                                                                                   | 9                                                                                   | 1131                                                                                | 163                                                                                 |
| Peak Hour Factor             | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 354                                                                               | 0                                                                                 | 324                                                                               | 134                                                                               | 22                                                                                | 85                                                                                | 305                                                                                 | 2177                                                                                | 5                                                                                   | 20                                                                                  | 1558                                                                                | 695                                                                                 |
| Arrive On Green              | 0.21                                                                              | 0.00                                                                              | 0.21                                                                              | 0.21                                                                              | 0.00                                                                              | 0.21                                                                              | 0.17                                                                                | 0.60                                                                                | 0.60                                                                                | 0.01                                                                                | 0.44                                                                                | 0.44                                                                                |
| Sat Flow, veh/h              | 1392                                                                              | 0                                                                                 | 1572                                                                              | 302                                                                               | 109                                                                               | 411                                                                               | 1767                                                                                | 3608                                                                                | 9                                                                                   | 1767                                                                                | 3526                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 204                                                                               | 0                                                                                 | 197                                                                               | 22                                                                                | 0                                                                                 | 0                                                                                 | 260                                                                                 | 584                                                                                 | 614                                                                                 | 9                                                                                   | 1131                                                                                | 163                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1392                                                                              | 0                                                                                 | 1572                                                                              | 822                                                                               | 0                                                                                 | 0                                                                                 | 1767                                                                                | 1763                                                                                | 1854                                                                                | 1767                                                                                | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 3.4                                                                               | 0.0                                                                               | 8.6                                                                               | 0.1                                                                               | 0.0                                                                               | 0.0                                                                               | 10.8                                                                                | 14.8                                                                                | 14.8                                                                                | 0.4                                                                                 | 19.9                                                                                | 4.9                                                                                 |
| Cycle Q Clear(g_c), s        | 12.1                                                                              | 0.0                                                                               | 8.6                                                                               | 8.7                                                                               | 0.0                                                                               | 0.0                                                                               | 10.8                                                                                | 14.8                                                                                | 14.8                                                                                | 0.4                                                                                 | 19.9                                                                                | 4.9                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 0.50                                                                              |                                                                                   | 0.50                                                                              | 1.00                                                                                |                                                                                     | 0.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 354                                                                               | 0                                                                                 | 324                                                                               | 241                                                                               | 0                                                                                 | 0                                                                                 | 305                                                                                 | 1064                                                                                | 1118                                                                                | 20                                                                                  | 1558                                                                                | 695                                                                                 |
| V/C Ratio(X)                 | 0.58                                                                              | 0.00                                                                              | 0.61                                                                              | 0.09                                                                              | 0.00                                                                              | 0.00                                                                              | 0.85                                                                                | 0.55                                                                                | 0.55                                                                                | 0.45                                                                                | 0.73                                                                                | 0.23                                                                                |
| Avail Cap(c_a), veh/h        | 547                                                                               | 0                                                                                 | 542                                                                               | 428                                                                               | 0                                                                                 | 0                                                                                 | 410                                                                                 | 1064                                                                                | 1118                                                                                | 117                                                                                 | 1558                                                                                | 695                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 28.8                                                                              | 0.0                                                                               | 27.2                                                                              | 24.4                                                                              | 0.0                                                                               | 0.0                                                                               | 30.3                                                                                | 8.9                                                                                 | 8.9                                                                                 | 37.0                                                                                | 17.3                                                                                | 13.1                                                                                |
| Incr Delay (d2), s/veh       | 1.5                                                                               | 0.0                                                                               | 1.8                                                                               | 0.2                                                                               | 0.0                                                                               | 0.0                                                                               | 12.2                                                                                | 2.0                                                                                 | 1.9                                                                                 | 14.7                                                                                | 3.0                                                                                 | 0.8                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 3.5                                                                               | 0.0                                                                               | 3.3                                                                               | 0.3                                                                               | 0.0                                                                               | 0.0                                                                               | 5.4                                                                                 | 5.4                                                                                 | 5.6                                                                                 | 0.2                                                                                 | 8.0                                                                                 | 1.8                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 30.3                                                                              | 0.0                                                                               | 29.0                                                                              | 24.5                                                                              | 0.0                                                                               | 0.0                                                                               | 42.4                                                                                | 10.9                                                                                | 10.8                                                                                | 51.8                                                                                | 20.3                                                                                | 13.9                                                                                |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | C                                                                                 | C                                                                                 | A                                                                                 | A                                                                                 | D                                                                                   | B                                                                                   | B                                                                                   | D                                                                                   | C                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 401                                                                               |                                                                                   |                                                                                   | 22                                                                                |                                                                                   |                                                                                   | 1458                                                                                |                                                                                     |                                                                                     | 1303                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 29.6                                                                              |                                                                                   |                                                                                   | 24.5                                                                              |                                                                                   |                                                                                   | 16.5                                                                                |                                                                                     |                                                                                     | 19.7                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 5.4                                                                               | 50.0                                                                              |                                                                                   | 20.1                                                                              | 17.5                                                                              | 37.8                                                                              |                                                                                     | 20.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               |                                                                                     | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 5.0                                                                               | 45.5                                                                              |                                                                                   | 26.0                                                                              | 17.5                                                                              | 33.0                                                                              |                                                                                     | 26.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 2.4                                                                               | 16.8                                                                              |                                                                                   | 14.1                                                                              | 12.8                                                                              | 21.9                                                                              |                                                                                     | 10.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 9.7                                                                               |                                                                                   | 1.5                                                                               | 0.3                                                                               | 6.3                                                                               |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 19.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 11: 11th Avenue & SR 198 WB On Ramp/4th Street

11/03/2020

|                              |  |      |     |      |      |      |      |      |      |      |      |      |
|------------------------------|------------------------------------------------------------------------------------|------|-----|------|------|------|------|------|------|------|------|------|
| Movement                     | EBL                                                                                | EBT  | EBR | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations          |                                                                                    |      |     | ↰    | ↱    | ↰    | ↰    | ↱    |      |      | ↱    | ↰    |
| Traffic Volume (veh/h)       | 0                                                                                  | 0    | 0   | 236  | 38   | 277  | 99   | 1130 | 0    | 0    | 1091 | 300  |
| Future Volume (veh/h)        | 0                                                                                  | 0    | 0   | 236  | 38   | 277  | 99   | 1130 | 0    | 0    | 1091 | 300  |
| Initial Q (Qb), veh          |                                                                                    |      |     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Ped-Bike Adj(A_pbT)          |                                                                                    |      |     | 1.00 |      | 1.00 | 1.00 |      | 1.00 | 1.00 |      | 1.00 |
| Parking Bus, Adj             |                                                                                    |      |     | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach        |                                                                                    |      |     | No   |      |      | No   |      |      |      | No   |      |
| Adj Sat Flow, veh/h/ln       |                                                                                    |      |     | 1856 | 1856 | 1856 | 1856 | 1856 | 0    | 0    | 1856 | 1856 |
| Adj Flow Rate, veh/h         |                                                                                    |      |     | 248  | 40   | 292  | 104  | 1189 | 0    | 0    | 1148 | 316  |
| Peak Hour Factor             |                                                                                    |      |     | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Percent Heavy Veh, %         |                                                                                    |      |     | 3    | 3    | 3    | 3    | 3    | 0    | 0    | 3    | 3    |
| Cap, veh/h                   |                                                                                    |      |     | 397  | 416  | 353  | 133  | 2324 | 0    | 0    | 1853 | 827  |
| Arrive On Green              |                                                                                    |      |     | 0.22 | 0.22 | 0.22 | 0.08 | 0.66 | 0.00 | 0.00 | 0.53 | 0.53 |
| Sat Flow, veh/h              |                                                                                    |      |     | 1767 | 1856 | 1572 | 1767 | 3618 | 0    | 0    | 3618 | 1572 |
| Grp Volume(v), veh/h         |                                                                                    |      |     | 248  | 40   | 292  | 104  | 1189 | 0    | 0    | 1148 | 316  |
| Grp Sat Flow(s),veh/h/ln     |                                                                                    |      |     | 1767 | 1856 | 1572 | 1767 | 1763 | 0    | 0    | 1763 | 1572 |
| Q Serve(g_s), s              |                                                                                    |      |     | 9.8  | 1.3  | 13.7 | 4.5  | 13.4 | 0.0  | 0.0  | 17.7 | 9.2  |
| Cycle Q Clear(g_c), s        |                                                                                    |      |     | 9.8  | 1.3  | 13.7 | 4.5  | 13.4 | 0.0  | 0.0  | 17.7 | 9.2  |
| Prop In Lane                 |                                                                                    |      |     | 1.00 |      | 1.00 | 1.00 |      | 0.00 | 0.00 |      | 1.00 |
| Lane Grp Cap(c), veh/h       |                                                                                    |      |     | 397  | 416  | 353  | 133  | 2324 | 0    | 0    | 1853 | 827  |
| V/C Ratio(X)                 |                                                                                    |      |     | 0.63 | 0.10 | 0.83 | 0.78 | 0.51 | 0.00 | 0.00 | 0.62 | 0.38 |
| Avail Cap(c_a), veh/h        |                                                                                    |      |     | 685  | 720  | 610  | 217  | 2324 | 0    | 0    | 1853 | 827  |
| HCM Platoon Ratio            |                                                                                    |      |     | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I)           |                                                                                    |      |     | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh     |                                                                                    |      |     | 27.1 | 23.8 | 28.6 | 35.1 | 6.8  | 0.0  | 0.0  | 12.9 | 10.9 |
| Incr Delay (d2), s/veh       |                                                                                    |      |     | 1.6  | 0.1  | 5.0  | 9.5  | 0.8  | 0.0  | 0.0  | 1.6  | 1.3  |
| Initial Q Delay(d3),s/veh    |                                                                                    |      |     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile BackOfQ(50%),veh/ln     |                                                                                    |      |     | 4.0  | 0.5  | 5.2  | 2.2  | 4.2  | 0.0  | 0.0  | 6.4  | 3.1  |
| Unsig. Movement Delay, s/veh |                                                                                    |      |     |      |      |      |      |      |      |      |      |      |
| LnGrp Delay(d),s/veh         |                                                                                    |      |     | 28.7 | 23.9 | 33.5 | 44.6 | 7.6  | 0.0  | 0.0  | 14.5 | 12.2 |
| LnGrp LOS                    |                                                                                    |      |     | C    | C    | C    | D    | A    | A    | A    | B    | B    |
| Approach Vol, veh/h          |                                                                                    |      |     |      | 580  |      |      | 1293 |      |      | 1464 |      |
| Approach Delay, s/veh        |                                                                                    |      |     |      | 30.8 |      |      | 10.6 |      |      | 14.0 |      |
| Approach LOS                 |                                                                                    |      |     |      | C    |      |      | B    |      |      | B    |      |
| Timer - Assigned Phs         |                                                                                    | 2    |     |      | 5    | 6    |      | 8    |      |      |      |      |
| Phs Duration (G+Y+Rc), s     |                                                                                    | 55.5 |     |      | 10.3 | 45.2 |      | 21.9 |      |      |      |      |
| Change Period (Y+Rc), s      |                                                                                    | 4.5  |     |      | 4.5  | 4.5  |      | 4.5  |      |      |      |      |
| Max Green Setting (Gmax), s  |                                                                                    | 51.0 |     |      | 9.5  | 37.0 |      | 30.0 |      |      |      |      |
| Max Q Clear Time (g_c+I1), s |                                                                                    | 15.4 |     |      | 6.5  | 19.7 |      | 15.7 |      |      |      |      |
| Green Ext Time (p_c), s      |                                                                                    | 11.4 |     |      | 0.1  | 8.8  |      | 1.7  |      |      |      |      |
| <b>Intersection Summary</b>  |                                                                                    |      |     |      |      |      |      |      |      |      |      |      |
| HCM 6th Ctrl Delay           |                                                                                    |      |     | 15.6 |      |      |      |      |      |      |      |      |
| HCM 6th LOS                  |                                                                                    |      |     | B    |      |      |      |      |      |      |      |      |

# HCM 6th Signalized Intersection Summary 12: 11th Avenue & SR 198 EB Off Ramp/3rd Street

11/03/2020

|                              |  |      |      |      |     |     |      |      |      |      |      |      |
|------------------------------|------------------------------------------------------------------------------------|------|------|------|-----|-----|------|------|------|------|------|------|
| Movement                     | EBL                                                                                | EBT  | EBR  | WBL  | WBT | WBR | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations          |                                                                                    | ↩    | ↩    |      |     |     |      | ↩    | ↩    | ↩    | ↩    | ↩    |
| Traffic Volume (veh/h)       | 399                                                                                | 86   | 81   | 0    | 0   | 0   | 0    | 830  | 220  | 426  | 906  | 0    |
| Future Volume (veh/h)        | 399                                                                                | 86   | 81   | 0    | 0   | 0   | 0    | 830  | 220  | 426  | 906  | 0    |
| Initial Q (Qb), veh          | 0                                                                                  | 0    | 0    |      |     |     | 0    | 0    | 0    | 0    | 0    | 0    |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                               |      | 1.00 |      |     |     | 1.00 |      | 1.00 | 1.00 |      | 1.00 |
| Parking Bus, Adj             | 1.00                                                                               | 1.00 | 1.00 |      |     |     | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach        | No                                                                                 |      |      |      |     |     | No   |      |      | No   |      |      |
| Adj Sat Flow, veh/h/ln       | 1856                                                                               | 1856 | 1856 |      |     |     | 0    | 1856 | 1856 | 1856 | 1856 | 0    |
| Adj Flow Rate, veh/h         | 416                                                                                | 90   | 84   |      |     |     | 0    | 865  | 229  | 444  | 944  | 0    |
| Peak Hour Factor             | 0.96                                                                               | 0.96 | 0.96 |      |     |     | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Percent Heavy Veh, %         | 3                                                                                  | 3    | 3    |      |     |     | 0    | 3    | 3    | 3    | 3    | 0    |
| Cap, veh/h                   | 443                                                                                | 96   | 475  |      |     |     | 0    | 982  | 438  | 475  | 2106 | 0    |
| Arrive On Green              | 0.30                                                                               | 0.30 | 0.30 |      |     |     | 0.00 | 0.28 | 0.28 | 0.27 | 0.60 | 0.00 |
| Sat Flow, veh/h              | 1465                                                                               | 317  | 1572 |      |     |     | 0    | 3618 | 1572 | 1767 | 3618 | 0    |
| Grp Volume(v), veh/h         | 506                                                                                | 0    | 84   |      |     |     | 0    | 865  | 229  | 444  | 944  | 0    |
| Grp Sat Flow(s),veh/h/ln     | 1782                                                                               | 0    | 1572 |      |     |     | 0    | 1763 | 1572 | 1767 | 1763 | 0    |
| Q Serve(g_s), s              | 24.8                                                                               | 0.0  | 3.5  |      |     |     | 0.0  | 21.0 | 11.0 | 22.0 | 13.2 | 0.0  |
| Cycle Q Clear(g_c), s        | 24.8                                                                               | 0.0  | 3.5  |      |     |     | 0.0  | 21.0 | 11.0 | 22.0 | 13.2 | 0.0  |
| Prop In Lane                 | 0.82                                                                               |      | 1.00 |      |     |     | 0.00 |      | 1.00 | 1.00 |      | 0.00 |
| Lane Grp Cap(c), veh/h       | 538                                                                                | 0    | 475  |      |     |     | 0    | 982  | 438  | 475  | 2106 | 0    |
| V/C Ratio(X)                 | 0.94                                                                               | 0.00 | 0.18 |      |     |     | 0.00 | 0.88 | 0.52 | 0.93 | 0.45 | 0.00 |
| Avail Cap(c_a), veh/h        | 547                                                                                | 0    | 483  |      |     |     | 0    | 982  | 438  | 484  | 2106 | 0    |
| HCM Platoon Ratio            | 1.00                                                                               | 1.00 | 1.00 |      |     |     | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I)           | 1.00                                                                               | 0.00 | 1.00 |      |     |     | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 |
| Uniform Delay (d), s/veh     | 30.5                                                                               | 0.0  | 23.0 |      |     |     | 0.0  | 30.9 | 27.3 | 32.0 | 9.9  | 0.0  |
| Incr Delay (d2), s/veh       | 24.3                                                                               | 0.0  | 0.2  |      |     |     | 0.0  | 11.2 | 4.4  | 25.4 | 0.7  | 0.0  |
| Initial Q Delay(d3),s/veh    | 0.0                                                                                | 0.0  | 0.0  |      |     |     | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile BackOfQ(50%),veh/ln     | 13.4                                                                               | 0.0  | 1.2  |      |     |     | 0.0  | 9.9  | 4.4  | 12.4 | 4.8  | 0.0  |
| Unsig. Movement Delay, s/veh |                                                                                    |      |      |      |     |     |      |      |      |      |      |      |
| LnGrp Delay(d),s/veh         | 54.8                                                                               | 0.0  | 23.2 |      |     |     | 0.0  | 42.1 | 31.7 | 57.3 | 10.6 | 0.0  |
| LnGrp LOS                    | D                                                                                  | A    | C    |      |     |     | A    | D    | C    | E    | B    | A    |
| Approach Vol, veh/h          | 590                                                                                |      |      |      |     |     | 1094 |      |      | 1388 |      |      |
| Approach Delay, s/veh        | 50.3                                                                               |      |      |      |     |     | 39.9 |      |      | 25.6 |      |      |
| Approach LOS                 | D                                                                                  |      |      |      |     |     | D    |      |      | C    |      |      |
| Timer - Assigned Phs         | 1                                                                                  | 2    |      | 4    |     |     | 6    |      |      |      |      |      |
| Phs Duration (G+Y+Rc), s     | 28.6                                                                               | 29.4 |      | 31.5 |     |     | 58.0 |      |      |      |      |      |
| Change Period (Y+Rc), s      | 4.5                                                                                | 4.5  |      | 4.5  |     |     | 4.5  |      |      |      |      |      |
| Max Green Setting (Gmax), s  | 24.5                                                                               | 24.5 |      | 27.5 |     |     | 53.5 |      |      |      |      |      |
| Max Q Clear Time (g_c+I1), s | 24.0                                                                               | 23.0 |      | 26.8 |     |     | 15.2 |      |      |      |      |      |
| Green Ext Time (p_c), s      | 0.1                                                                                | 0.9  |      | 0.3  |     |     | 8.3  |      |      |      |      |      |
| <b>Intersection Summary</b>  |                                                                                    |      |      |      |     |     |      |      |      |      |      |      |
| HCM 6th Ctrl Delay           | 35.4                                                                               |      |      |      |     |     |      |      |      |      |      |      |
| HCM 6th LOS                  | D                                                                                  |      |      |      |     |     |      |      |      |      |      |      |

HCM 6th AWSC  
5: Campus Dr/Campus Drive & 7th Street

11/03/2020

| Intersection              |      |
|---------------------------|------|
| Intersection Delay, s/veh | 31.8 |
| Intersection LOS          | D    |

| Movement            | EBL                                                                               | EBT                                                                               | EBR  | WBL                                                                               | WBT                                                                               | WBR  | NBL  | NBT                                                                                 | NBR  | SBL  | SBT                                                                                 | SBR  |
|---------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|
| Lane Configurations |  |  |      |  |  |      |      |  |      |      |  |      |
| Traffic Vol, veh/h  | 76                                                                                | 287                                                                               | 41   | 23                                                                                | 365                                                                               | 43   | 65   | 147                                                                                 | 28   | 95   | 83                                                                                  | 94   |
| Future Vol, veh/h   | 76                                                                                | 287                                                                               | 41   | 23                                                                                | 365                                                                               | 43   | 65   | 147                                                                                 | 28   | 95   | 83                                                                                  | 94   |
| Peak Hour Factor    | 0.96                                                                              | 0.96                                                                              | 0.96 | 0.96                                                                              | 0.96                                                                              | 0.96 | 0.96 | 0.96                                                                                | 0.96 | 0.96 | 0.96                                                                                | 0.96 |
| Heavy Vehicles, %   | 3                                                                                 | 3                                                                                 | 3    | 3                                                                                 | 3                                                                                 | 3    | 3    | 3                                                                                   | 3    | 3    | 3                                                                                   | 3    |
| Mvmt Flow           | 79                                                                                | 299                                                                               | 43   | 24                                                                                | 380                                                                               | 45   | 68   | 153                                                                                 | 29   | 99   | 86                                                                                  | 98   |
| Number of Lanes     | 1                                                                                 | 1                                                                                 | 0    | 1                                                                                 | 1                                                                                 | 0    | 0    | 1                                                                                   | 0    | 0    | 1                                                                                   | 0    |

| Approach                   | EB | WB | NB   | SB   |
|----------------------------|----|----|------|------|
| Opposing Approach          | WB | EB | SB   | NB   |
| Opposing Lanes             | 2  | 2  | 1    | 1    |
| Conflicting Approach Left  | SB | NB | EB   | WB   |
| Conflicting Lanes Left     | 1  | 1  | 2    | 2    |
| Conflicting Approach Right | NB | SB | WB   | EB   |
| Conflicting Lanes Right    | 1  | 1  | 2    | 2    |
| HCM Control Delay          | 27 | 48 | 21.1 | 22.8 |
| HCM LOS                    | D  | E  | C    | C    |

| Lane                   | NBLn1 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | SBLn1 |
|------------------------|-------|-------|-------|-------|-------|-------|
| Vol Left, %            | 27%   | 100%  | 0%    | 100%  | 0%    | 35%   |
| Vol Thru, %            | 61%   | 0%    | 88%   | 0%    | 89%   | 31%   |
| Vol Right, %           | 12%   | 0%    | 12%   | 0%    | 11%   | 35%   |
| Sign Control           | Stop  | Stop  | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 240   | 76    | 328   | 23    | 408   | 272   |
| LT Vol                 | 65    | 76    | 0     | 23    | 0     | 95    |
| Through Vol            | 147   | 0     | 287   | 0     | 365   | 83    |
| RT Vol                 | 28    | 0     | 41    | 0     | 43    | 94    |
| Lane Flow Rate         | 250   | 79    | 342   | 24    | 425   | 283   |
| Geometry Grp           | 2     | 7     | 7     | 7     | 7     | 2     |
| Degree of Util (X)     | 0.561 | 0.186 | 0.743 | 0.055 | 0.909 | 0.616 |
| Departure Headway (Hd) | 8.077 | 8.441 | 7.832 | 8.292 | 7.699 | 7.829 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 445   | 424   | 461   | 431   | 468   | 459   |
| Service Time           | 6.171 | 6.224 | 5.615 | 6.068 | 5.474 | 5.918 |
| HCM Lane V/C Ratio     | 0.562 | 0.186 | 0.742 | 0.056 | 0.908 | 0.617 |
| HCM Control Delay      | 21.1  | 13.2  | 30.2  | 11.6  | 50    | 22.8  |
| HCM Lane LOS           | C     | B     | D     | B     | E     | C     |
| HCM 95th-tile Q        | 3.4   | 0.7   | 6.1   | 0.2   | 10.2  | 4.1   |

# CUMULATIVE YEAR 2042 WORKSHEETS

HCM 6th TWSC  
1: 12th Avenue & Glendale Avenue

11/02/2020

| Intersection             |      |      |                                                                                   |      |      |                                                                                   |      |                                                                                   |      |                                                                                     |                                                                                     |      |
|--------------------------|------|------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 2.7  |      |                                                                                   |      |      |                                                                                   |      |                                                                                   |      |                                                                                     |                                                                                     |      |
| Movement                 | EBL  | EBT  | EBR                                                                               | WBL  | WBT  | WBR                                                                               | NBL  | NBT                                                                               | NBR  | SBL                                                                                 | SBT                                                                                 | SBR  |
| Lane Configurations      |      |      |  |      |      |  |      |  |      |  |  |      |
| Traffic Vol, veh/h       | 0    | 0    | 111                                                                               | 0    | 0    | 65                                                                                | 0    | 1829                                                                              | 74   | 62                                                                                  | 1138                                                                                | 155  |
| Future Vol, veh/h        | 0    | 0    | 111                                                                               | 0    | 0    | 65                                                                                | 0    | 1829                                                                              | 74   | 62                                                                                  | 1138                                                                                | 155  |
| Conflicting Peds, #/hr   | 0    | 0    | 0                                                                                 | 0    | 0    | 0                                                                                 | 0    | 0                                                                                 | 0    | 0                                                                                   | 0                                                                                   | 0    |
| Sign Control             | Stop | Stop | Stop                                                                              | Stop | Stop | Stop                                                                              | Free | Free                                                                              | Free | Free                                                                                | Free                                                                                | Free |
| RT Channelized           | -    | -    | None                                                                              | -    | -    | None                                                                              | -    | -                                                                                 | None | -                                                                                   | -                                                                                   | None |
| Storage Length           | -    | -    | 0                                                                                 | -    | -    | 0                                                                                 | -    | -                                                                                 | -    | 125                                                                                 | -                                                                                   | -    |
| Veh in Median Storage, # | -    | 0    | -                                                                                 | -    | 0    | -                                                                                 | -    | 0                                                                                 | -    | -                                                                                   | 0                                                                                   | -    |
| Grade, %                 | -    | 0    | -                                                                                 | -    | 0    | -                                                                                 | -    | 0                                                                                 | -    | -                                                                                   | 0                                                                                   | -    |
| Peak Hour Factor         | 92   | 92   | 92                                                                                | 92   | 92   | 92                                                                                | 92   | 92                                                                                | 92   | 92                                                                                  | 92                                                                                  | 92   |
| Heavy Vehicles, %        | 3    | 3    | 3                                                                                 | 3    | 3    | 3                                                                                 | 3    | 3                                                                                 | 3    | 3                                                                                   | 3                                                                                   | 3    |
| Mvmt Flow                | 0    | 0    | 121                                                                               | 0    | 0    | 71                                                                                | 0    | 1988                                                                              | 80   | 67                                                                                  | 1237                                                                                | 168  |

| Major/Minor          | Minor2 |   | Minor1 |   | Major1 |      | Major2 |      |
|----------------------|--------|---|--------|---|--------|------|--------|------|
| Conflicting Flow All | -      | - | 703    | - | -      | 1034 | -      | 0    |
| Stage 1              | -      | - | -      | - | -      | -    | -      | -    |
| Stage 2              | -      | - | -      | - | -      | -    | -      | -    |
| Critical Hdwy        | -      | - | 7.16   | - | -      | 7.16 | -      | 5.36 |
| Critical Hdwy Stg 1  | -      | - | -      | - | -      | -    | -      | -    |
| Critical Hdwy Stg 2  | -      | - | -      | - | -      | -    | -      | -    |
| Follow-up Hdwy       | -      | - | 3.93   | - | -      | 3.93 | -      | 3.13 |
| Pot Cap-1 Maneuver   | 0      | 0 | 324    | 0 | 0      | 195  | 0      | 114  |
| Stage 1              | 0      | 0 | -      | 0 | 0      | -    | -      | -    |
| Stage 2              | 0      | 0 | -      | 0 | 0      | -    | -      | -    |
| Platoon blocked, %   | -      | - | -      | - | -      | -    | -      | -    |
| Mov Cap-1 Maneuver   | -      | - | 324    | - | -      | 195  | -      | 114  |
| Mov Cap-2 Maneuver   | -      | - | -      | - | -      | -    | -      | -    |
| Stage 1              | -      | - | -      | - | -      | -    | -      | -    |
| Stage 2              | -      | - | -      | - | -      | -    | -      | -    |

| Approach             | EB   | WB   | NB | SB  |
|----------------------|------|------|----|-----|
| HCM Control Delay, s | 22.6 | 33.6 | 0  | 3.4 |
| HCM LOS              | C    | D    |    |     |

| Minor Lane/Major Mvmt | NBT | NBR | EBLn1WBLn1 | SBL   | SBT   | SBR |
|-----------------------|-----|-----|------------|-------|-------|-----|
| Capacity (veh/h)      | -   | -   | 324        | 195   | 114   | -   |
| HCM Lane V/C Ratio    | -   | -   | 0.372      | 0.362 | 0.591 | -   |
| HCM Control Delay (s) | -   | -   | 22.6       | 33.6  | 74.4  | -   |
| HCM Lane LOS          | -   | -   | C          | D     | F     | -   |
| HCM 95th %tile Q(veh) | -   | -   | 1.7        | 1.6   | 2.9   | -   |



HCM 6th TWSC  
6: Campus Dr & 6th Street

11/02/2020

| Intersection             |        |       |        |            |        |       |        |      |      |       |      |      |
|--------------------------|--------|-------|--------|------------|--------|-------|--------|------|------|-------|------|------|
| Int Delay, s/veh         | 7.3    |       |        |            |        |       |        |      |      |       |      |      |
| Movement                 | EBL    | EBT   | EBR    | WBL        | WBT    | WBR   | NBL    | NBT  | NBR  | SBL   | SBT  | SBR  |
| Lane Configurations      |        | ↕     |        |            | ↕      |       |        | ↕    |      |       | ↕    |      |
| Traffic Vol, veh/h       | 25     | 20    | 2      | 0          | 15     | 113   | 2      | 6    | 2    | 46    | 8    | 39   |
| Future Vol, veh/h        | 25     | 20    | 2      | 0          | 15     | 113   | 2      | 6    | 2    | 46    | 8    | 39   |
| Conflicting Peds, #/hr   | 0      | 0     | 0      | 0          | 0      | 0     | 0      | 0    | 0    | 0     | 0    | 0    |
| Sign Control             | Stop   | Stop  | Stop   | Stop       | Stop   | Stop  | Free   | Free | Free | Free  | Free | Free |
| RT Channelized           | -      | -     | None   | -          | -      | None  | -      | -    | None | -     | -    | None |
| Storage Length           | -      | -     | -      | -          | -      | -     | -      | -    | -    | -     | -    | -    |
| Veh in Median Storage, # | -      | 0     | -      | -          | 0      | -     | -      | 0    | -    | -     | 0    | -    |
| Grade, %                 | -      | 0     | -      | -          | 0      | -     | -      | 0    | -    | -     | 0    | -    |
| Peak Hour Factor         | 92     | 92    | 92     | 92         | 92     | 92    | 92     | 92   | 92   | 92    | 92   | 92   |
| Heavy Vehicles, %        | 3      | 3     | 3      | 3          | 3      | 3     | 3      | 3    | 3    | 3     | 3    | 3    |
| Mvmt Flow                | 27     | 22    | 2      | 0          | 16     | 123   | 2      | 7    | 2    | 50    | 9    | 42   |
|                          |        |       |        |            |        |       |        |      |      |       |      |      |
| Major/Minor              | Minor2 |       | Minor1 |            | Major1 |       | Major2 |      |      |       |      |      |
| Conflicting Flow All     | 212    | 143   | 30     | 154        | 163    | 8     | 51     | 0    | 0    | 9     | 0    | 0    |
| Stage 1                  | 130    | 130   | -      | 12         | 12     | -     | -      | -    | -    | -     | -    | -    |
| Stage 2                  | 82     | 13    | -      | 142        | 151    | -     | -      | -    | -    | -     | -    | -    |
| Critical Hdwy            | 7.13   | 6.53  | 6.23   | 7.13       | 6.53   | 6.23  | 4.13   | -    | -    | 4.13  | -    | -    |
| Critical Hdwy Stg 1      | 6.13   | 5.53  | -      | 6.13       | 5.53   | -     | -      | -    | -    | -     | -    | -    |
| Critical Hdwy Stg 2      | 6.13   | 5.53  | -      | 6.13       | 5.53   | -     | -      | -    | -    | -     | -    | -    |
| Follow-up Hdwy           | 3.527  | 4.027 | 3.327  | 3.527      | 4.027  | 3.327 | 2.227  | -    | -    | 2.227 | -    | -    |
| Pot Cap-1 Maneuver       | 743    | 746   | 1042   | 811        | 728    | 1071  | 1549   | -    | -    | 1604  | -    | -    |
| Stage 1                  | 871    | 787   | -      | 1006       | 884    | -     | -      | -    | -    | -     | -    | -    |
| Stage 2                  | 924    | 883   | -      | 859        | 770    | -     | -      | -    | -    | -     | -    | -    |
| Platoon blocked, %       |        |       |        |            |        |       |        | -    | -    |       | -    | -    |
| Mov Cap-1 Maneuver       | 630    | 721   | 1042   | 771        | 704    | 1071  | 1549   | -    | -    | 1604  | -    | -    |
| Mov Cap-2 Maneuver       | 630    | 721   | -      | 771        | 704    | -     | -      | -    | -    | -     | -    | -    |
| Stage 1                  | 870    | 762   | -      | 1005       | 883    | -     | -      | -    | -    | -     | -    | -    |
| Stage 2                  | 802    | 882   | -      | 806        | 745    | -     | -      | -    | -    | -     | -    | -    |
|                          |        |       |        |            |        |       |        |      |      |       |      |      |
|                          |        |       |        |            |        |       |        |      |      |       |      |      |
| Approach                 | EB     |       | WB     |            | NB     |       | SB     |      |      |       |      |      |
| HCM Control Delay, s     | 10.7   |       | 9.1    |            | 1.5    |       | 3.6    |      |      |       |      |      |
| HCM LOS                  | B      |       | A      |            |        |       |        |      |      |       |      |      |
|                          |        |       |        |            |        |       |        |      |      |       |      |      |
| Minor Lane/Major Mvmt    | NBL    | NBT   | NBR    | EBLn1WBLn1 | SBL    | SBT   | SBR    |      |      |       |      |      |
| Capacity (veh/h)         | 1549   | -     | -      | 678        | 1009   | 1604  | -      | -    |      |       |      |      |
| HCM Lane V/C Ratio       | 0.001  | -     | -      | 0.075      | 0.138  | 0.031 | -      | -    |      |       |      |      |
| HCM Control Delay (s)    | 7.3    | 0     | -      | 10.7       | 9.1    | 7.3   | 0      | -    |      |       |      |      |
| HCM Lane LOS             | A      | A     | -      | B          | A      | A     | A      | -    |      |       |      |      |
| HCM 95th %tile Q(veh)    | 0      | -     | -      | 0.2        | 0.5    | 0.1   | -      | -    |      |       |      |      |

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 2.3  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      |      | ↗    |      |      | ↗    | ↗    | ↗↘   |      | ↗    | ↗↘   |      |
| Traffic Vol, veh/h       | 0    | 0    | 80   | 0    | 0    | 80   | 153  | 1176 | 99   | 114  | 770  | 22   |
| Future Vol, veh/h        | 0    | 0    | 80   | 0    | 0    | 80   | 153  | 1176 | 99   | 114  | 770  | 22   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | 0    | -    | -    | 0    | 75   | -    | -    | 125  | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    |
| Mvmt Flow                | 0    | 0    | 87   | 0    | 0    | 87   | 166  | 1278 | 108  | 124  | 837  | 24   |

| Major/Minor          | Minor2 |   | Minor1 |   | Major1 |      | Major2 |   |
|----------------------|--------|---|--------|---|--------|------|--------|---|
| Conflicting Flow All | -      | - | 431    | - | -      | 693  | 861    | 0 |
| Stage 1              | -      | - | -      | - | -      | -    | -      | - |
| Stage 2              | -      | - | -      | - | -      | -    | -      | - |
| Critical Hdwy        | -      | - | 6.96   | - | -      | 6.96 | 4.16   | - |
| Critical Hdwy Stg 1  | -      | - | -      | - | -      | -    | -      | - |
| Critical Hdwy Stg 2  | -      | - | -      | - | -      | -    | -      | - |
| Follow-up Hdwy       | -      | - | 3.33   | - | -      | 3.33 | 2.23   | - |
| Pot Cap-1 Maneuver   | 0      | 0 | 570    | 0 | 0      | 384  | 770    | - |
| Stage 1              | 0      | 0 | -      | 0 | 0      | -    | -      | - |
| Stage 2              | 0      | 0 | -      | 0 | 0      | -    | -      | - |
| Platoon blocked, %   | -      | - | -      | - | -      | -    | -      | - |
| Mov Cap-1 Maneuver   | -      | - | 570    | - | -      | 384  | 770    | - |
| Mov Cap-2 Maneuver   | -      | - | -      | - | -      | -    | -      | - |
| Stage 1              | -      | - | -      | - | -      | -    | -      | - |
| Stage 2              | -      | - | -      | - | -      | -    | -      | - |

| Approach             | EB   | WB   | NB  | SB  |
|----------------------|------|------|-----|-----|
| HCM Control Delay, s | 12.4 | 17.1 | 1.2 | 1.9 |
| HCM LOS              | B    | C    |     |     |

| Minor Lane/Major Mvmt | NBL   | NBT | NBR | EBLn1WBLn1 | SBL   | SBT   | SBR |
|-----------------------|-------|-----|-----|------------|-------|-------|-----|
| Capacity (veh/h)      | 770   | -   | -   | 570        | 384   | 485   | -   |
| HCM Lane V/C Ratio    | 0.216 | -   | -   | 0.153      | 0.226 | 0.255 | -   |
| HCM Control Delay (s) | 11    | -   | -   | 12.4       | 17.1  | 15    | -   |
| HCM Lane LOS          | B     | -   | -   | B          | C     | B     | -   |
| HCM 95th %tile Q(veh) | 0.8   | -   | -   | 0.5        | 0.9   | 1     | -   |

# HCM 6th Signalized Intersection Summary

## 2: SR 198 WB Ramps & 12th Avenue

11/02/2020

|                              |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | WBL                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                                 | SBR                                                                                 | NEL                                                                                 | NER                                                                                 |
| Lane Configurations          |  |  |  |  |                                                                                   |                                                                                   |  |  |                                                                                     |                                                                                     |
| Traffic Volume (veh/h)       | 71                                                                                | 719                                                                               | 79                                                                                | 1190                                                                              | 0                                                                                 | 0                                                                                 | 799                                                                                 | 444                                                                                 | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 71                                                                                | 719                                                                               | 79                                                                                | 1190                                                                              | 0                                                                                 | 0                                                                                 | 799                                                                                 | 444                                                                                 | 0                                                                                   | 0                                                                                   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 0                                                                                 | 0                                                                                 | 1856                                                                                | 1856                                                                                |                                                                                     |                                                                                     |
| Adj Flow Rate, veh/h         | 77                                                                                | 782                                                                               | 86                                                                                | 1293                                                                              | 0                                                                                 | 0                                                                                 | 868                                                                                 | 483                                                                                 |                                                                                     |                                                                                     |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                |                                                                                     |                                                                                     |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 3                                                                                   | 3                                                                                   |                                                                                     |                                                                                     |
| Cap, veh/h                   | 525                                                                               | 935                                                                               | 111                                                                               | 2076                                                                              | 0                                                                                 | 0                                                                                 | 1654                                                                                | 738                                                                                 |                                                                                     |                                                                                     |
| Arrive On Green              | 0.30                                                                              | 0.30                                                                              | 0.06                                                                              | 0.59                                                                              | 0.00                                                                              | 0.00                                                                              | 0.47                                                                                | 0.47                                                                                |                                                                                     |                                                                                     |
| Sat Flow, veh/h              | 1767                                                                              | 3145                                                                              | 1767                                                                              | 3618                                                                              | 0                                                                                 | 0                                                                                 | 3618                                                                                | 1572                                                                                |                                                                                     |                                                                                     |
| Grp Volume(v), veh/h         | 77                                                                                | 782                                                                               | 86                                                                                | 1293                                                                              | 0                                                                                 | 0                                                                                 | 868                                                                                 | 483                                                                                 |                                                                                     |                                                                                     |
| Grp Sat Flow(s),veh/h/ln     | 1767                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 0                                                                                 | 0                                                                                 | 1763                                                                                | 1572                                                                                |                                                                                     |                                                                                     |
| Q Serve(g_s), s              | 2.5                                                                               | 18.4                                                                              | 3.8                                                                               | 18.8                                                                              | 0.0                                                                               | 0.0                                                                               | 13.7                                                                                | 18.6                                                                                |                                                                                     |                                                                                     |
| Cycle Q Clear(g_c), s        | 2.5                                                                               | 18.4                                                                              | 3.8                                                                               | 18.8                                                                              | 0.0                                                                               | 0.0                                                                               | 13.7                                                                                | 18.6                                                                                |                                                                                     |                                                                                     |
| Prop In Lane                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 0.00                                                                              |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |
| Lane Grp Cap(c), veh/h       | 525                                                                               | 935                                                                               | 111                                                                               | 2076                                                                              | 0                                                                                 | 0                                                                                 | 1654                                                                                | 738                                                                                 |                                                                                     |                                                                                     |
| V/C Ratio(X)                 | 0.15                                                                              | 0.84                                                                              | 0.78                                                                              | 0.62                                                                              | 0.00                                                                              | 0.00                                                                              | 0.52                                                                                | 0.65                                                                                |                                                                                     |                                                                                     |
| Avail Cap(c_a), veh/h        | 772                                                                               | 1374                                                                              | 213                                                                               | 2076                                                                              | 0                                                                                 | 0                                                                                 | 1654                                                                                | 738                                                                                 |                                                                                     |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Uniform Delay (d), s/veh     | 20.4                                                                              | 26.0                                                                              | 36.5                                                                              | 10.5                                                                              | 0.0                                                                               | 0.0                                                                               | 14.8                                                                                | 16.1                                                                                |                                                                                     |                                                                                     |
| Incr Delay (d2), s/veh       | 0.1                                                                               | 3.1                                                                               | 11.0                                                                              | 1.4                                                                               | 0.0                                                                               | 0.0                                                                               | 1.2                                                                                 | 4.5                                                                                 |                                                                                     |                                                                                     |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |
| %ile BackOfQ(50%),veh/ln     | 1.0                                                                               | 6.6                                                                               | 1.9                                                                               | 6.2                                                                               | 0.0                                                                               | 0.0                                                                               | 5.1                                                                                 | 6.7                                                                                 |                                                                                     |                                                                                     |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 20.5                                                                              | 29.0                                                                              | 47.4                                                                              | 12.0                                                                              | 0.0                                                                               | 0.0                                                                               | 16.0                                                                                | 20.6                                                                                |                                                                                     |                                                                                     |
| LnGrp LOS                    | C                                                                                 | C                                                                                 | D                                                                                 | B                                                                                 | A                                                                                 | A                                                                                 | B                                                                                   | C                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          | 859                                                                               |                                                                                   |                                                                                   | 1379                                                                              |                                                                                   |                                                                                   | 1351                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 28.3                                                                              |                                                                                   |                                                                                   | 14.2                                                                              |                                                                                   |                                                                                   | 17.6                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 2                                                                                 |                                                                                   | 5                                                                                 |                                                                                   | 6                                                                                 | 8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 51.0                                                                              |                                                                                   | 9.5                                                                               |                                                                                   | 41.5                                                                              | 28.0                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 46.5                                                                              |                                                                                   | 9.5                                                                               |                                                                                   | 32.5                                                                              | 34.5                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 20.8                                                                              |                                                                                   | 5.8                                                                               |                                                                                   | 20.6                                                                              | 20.4                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 10.4                                                                              |                                                                                   | 0.0                                                                               |                                                                                   | 5.9                                                                               | 3.1                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 18.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary 3: 12th Avenue & SR 198 EB Off Ramps

11/02/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |  |  |                                                                                     |  |  |
| Traffic Volume (veh/h)       | 594                                                                               | 0                                                                                 | 25                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 674                                                                                 | 189                                                                                 | 0                                                                                   | 501                                                                                 | 366                                                                                 |
| Future Volume (veh/h)        | 594                                                                               | 0                                                                                 | 25                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 674                                                                                 | 189                                                                                 | 0                                                                                   | 501                                                                                 | 366                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 0                                                                                 | 1856                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1856                                                                                | 1856                                                                                | 0                                                                                   | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 646                                                                               | 0                                                                                 | 27                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 733                                                                                 | 0                                                                                   | 0                                                                                   | 545                                                                                 | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 0                                                                                 | 3                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 3                                                                                   | 3                                                                                   | 0                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 820                                                                               | 0                                                                                 | 376                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2231                                                                                |                                                                                     | 0                                                                                   | 2231                                                                                |                                                                                     |
| Arrive On Green              | 0.24                                                                              | 0.00                                                                              | 0.24                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 0.63                                                                                | 0.00                                                                                | 0.00                                                                                | 0.63                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 3428                                                                              | 0                                                                                 | 1572                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 3618                                                                                | 1572                                                                                | 0                                                                                   | 3618                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 646                                                                               | 0                                                                                 | 27                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 733                                                                                 | 0                                                                                   | 0                                                                                   | 545                                                                                 | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1714                                                                              | 0                                                                                 | 1572                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1763                                                                                | 1572                                                                                | 0                                                                                   | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 12.4                                                                              | 0.0                                                                               | 0.9                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 6.8                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 4.7                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 12.4                                                                              | 0.0                                                                               | 0.9                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 6.8                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 4.7                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                |                                                                                     | 1.00                                                                                | 0.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 820                                                                               | 0                                                                                 | 376                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2231                                                                                |                                                                                     | 0                                                                                   | 2231                                                                                |                                                                                     |
| V/C Ratio(X)                 | 0.79                                                                              | 0.00                                                                              | 0.07                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 0.33                                                                                |                                                                                     | 0.00                                                                                | 0.24                                                                                |                                                                                     |
| Avail Cap(c_a), veh/h        | 1780                                                                              | 0                                                                                 | 816                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2231                                                                                |                                                                                     | 0                                                                                   | 2231                                                                                |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 25.1                                                                              | 0.0                                                                               | 20.7                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 6.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 5.6                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 1.7                                                                               | 0.0                                                                               | 0.1                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 0.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.3                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 4.7                                                                               | 0.0                                                                               | 0.3                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 1.9                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 1.3                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 26.8                                                                              | 0.0                                                                               | 20.8                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 6.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 5.9                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | A                                                                                   | A                                                                                   |                                                                                     | A                                                                                   | A                                                                                   |                                                                                     |
| Approach Vol, veh/h          | 673                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 733                                                                                 |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 26.6                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6.4                                                                                 |                                                                                     |                                                                                     | 5.9                                                                                 |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 49.0                                                                              |                                                                                   |                                                                                   | 21.3                                                                              |                                                                                   |                                                                                   | 49.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               |                                                                                   |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                   | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 44.5                                                                              |                                                                                   |                                                                                   | 36.5                                                                              |                                                                                   |                                                                                   | 44.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 8.8                                                                               |                                                                                   |                                                                                   | 14.4                                                                              |                                                                                   |                                                                                   | 6.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 5.4                                                                               |                                                                                   |                                                                                   | 2.4                                                                               |                                                                                   |                                                                                   | 3.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 13.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 4: Campus Drive & Lacey Boulevard

11/02/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 31                                                                                | 603                                                                               | 40                                                                                | 73                                                                                | 603                                                                               | 66                                                                                | 26                                                                                  | 73                                                                                  | 76                                                                                  | 68                                                                                  | 100                                                                                 | 19                                                                                  |
| Future Volume (veh/h)        | 31                                                                                | 603                                                                               | 40                                                                                | 73                                                                                | 603                                                                               | 66                                                                                | 26                                                                                  | 73                                                                                  | 76                                                                                  | 68                                                                                  | 100                                                                                 | 19                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 34                                                                                | 655                                                                               | 43                                                                                | 79                                                                                | 655                                                                               | 72                                                                                | 28                                                                                  | 79                                                                                  | 83                                                                                  | 74                                                                                  | 109                                                                                 | 21                                                                                  |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 60                                                                                | 863                                                                               | 385                                                                               | 102                                                                               | 946                                                                               | 422                                                                               | 52                                                                                  | 308                                                                                 | 323                                                                                 | 144                                                                                 | 785                                                                                 | 665                                                                                 |
| Arrive On Green              | 0.03                                                                              | 0.24                                                                              | 0.24                                                                              | 0.06                                                                              | 0.27                                                                              | 0.27                                                                              | 0.03                                                                                | 0.37                                                                                | 0.37                                                                                | 0.08                                                                                | 0.42                                                                                | 0.42                                                                                |
| Sat Flow, veh/h              | 1767                                                                              | 3526                                                                              | 1572                                                                              | 1767                                                                              | 3526                                                                              | 1572                                                                              | 1767                                                                                | 828                                                                                 | 870                                                                                 | 1767                                                                                | 1856                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 34                                                                                | 655                                                                               | 43                                                                                | 79                                                                                | 655                                                                               | 72                                                                                | 28                                                                                  | 0                                                                                   | 162                                                                                 | 74                                                                                  | 109                                                                                 | 21                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1767                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                                | 0                                                                                   | 1699                                                                                | 1767                                                                                | 1856                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 1.4                                                                               | 12.7                                                                              | 1.6                                                                               | 3.2                                                                               | 12.3                                                                              | 1.9                                                                               | 1.1                                                                                 | 0.0                                                                                 | 4.9                                                                                 | 3.0                                                                                 | 2.6                                                                                 | 0.6                                                                                 |
| Cycle Q Clear(g_c), s        | 1.4                                                                               | 12.7                                                                              | 1.6                                                                               | 3.2                                                                               | 12.3                                                                              | 1.9                                                                               | 1.1                                                                                 | 0.0                                                                                 | 4.9                                                                                 | 3.0                                                                                 | 2.6                                                                                 | 0.6                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 0.51                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 60                                                                                | 863                                                                               | 385                                                                               | 102                                                                               | 946                                                                               | 422                                                                               | 52                                                                                  | 0                                                                                   | 631                                                                                 | 144                                                                                 | 785                                                                                 | 665                                                                                 |
| V/C Ratio(X)                 | 0.57                                                                              | 0.76                                                                              | 0.11                                                                              | 0.78                                                                              | 0.69                                                                              | 0.17                                                                              | 0.53                                                                                | 0.00                                                                                | 0.26                                                                                | 0.51                                                                                | 0.14                                                                                | 0.03                                                                                |
| Avail Cap(c_a), veh/h        | 156                                                                               | 1223                                                                              | 546                                                                               | 233                                                                               | 1377                                                                              | 614                                                                               | 137                                                                                 | 0                                                                                   | 631                                                                                 | 228                                                                                 | 785                                                                                 | 665                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 35.0                                                                              | 25.7                                                                              | 21.6                                                                              | 34.2                                                                              | 24.2                                                                              | 10.7                                                                              | 35.2                                                                                | 0.0                                                                                 | 16.1                                                                                | 32.4                                                                                | 13.0                                                                                | 12.4                                                                                |
| Incr Delay (d2), s/veh       | 8.1                                                                               | 1.8                                                                               | 0.1                                                                               | 11.8                                                                              | 0.9                                                                               | 0.2                                                                               | 8.2                                                                                 | 0.0                                                                                 | 1.0                                                                                 | 2.8                                                                                 | 0.4                                                                                 | 0.1                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.7                                                                               | 5.2                                                                               | 0.6                                                                               | 1.7                                                                               | 4.9                                                                               | 0.9                                                                               | 0.6                                                                                 | 0.0                                                                                 | 1.9                                                                                 | 1.3                                                                                 | 1.1                                                                                 | 0.2                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 43.0                                                                              | 27.5                                                                              | 21.7                                                                              | 46.0                                                                              | 25.1                                                                              | 10.9                                                                              | 43.4                                                                                | 0.0                                                                                 | 17.0                                                                                | 35.2                                                                                | 13.4                                                                                | 12.5                                                                                |
| LnGrp LOS                    | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 | B                                                                                 | D                                                                                   | A                                                                                   | B                                                                                   | D                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 732                                                                               |                                                                                   |                                                                                   | 806                                                                               |                                                                                   |                                                                                     | 190                                                                                 |                                                                                     |                                                                                     | 204                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 27.9                                                                              |                                                                                   |                                                                                   | 25.9                                                                              |                                                                                   |                                                                                     | 20.9                                                                                |                                                                                     |                                                                                     | 21.2                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 10.5                                                                              | 31.8                                                                              | 8.7                                                                               | 22.5                                                                              | 6.7                                                                               | 35.6                                                                              | 7.0                                                                                 | 24.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 9.5                                                                               | 27.3                                                                              | 9.7                                                                               | 25.5                                                                              | 5.7                                                                               | 31.1                                                                              | 6.5                                                                                 | 28.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 5.0                                                                               | 6.9                                                                               | 5.2                                                                               | 14.7                                                                              | 3.1                                                                               | 4.6                                                                               | 3.4                                                                                 | 14.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.9                                                                               | 0.1                                                                               | 3.3                                                                               | 0.0                                                                               | 0.6                                                                               | 0.0                                                                                 | 4.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 25.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 7: 11th Avenue & Lacey Boulevard

11/02/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 128                                                                               | 258                                                                               | 170                                                                               | 65                                                                                | 314                                                                               | 65                                                                                | 400                                                                                | 669                                                                                 | 77                                                                                  | 94                                                                                  | 725                                                                                 | 203                                                                                 |
| Future Volume (veh/h)        | 128                                                                               | 258                                                                               | 170                                                                               | 65                                                                                | 314                                                                               | 65                                                                                | 400                                                                                | 669                                                                                 | 77                                                                                  | 94                                                                                  | 725                                                                                 | 203                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                 |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                               | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 139                                                                               | 280                                                                               | 185                                                                               | 71                                                                                | 341                                                                               | 71                                                                                | 435                                                                                | 727                                                                                 | 84                                                                                  | 102                                                                                 | 788                                                                                 | 221                                                                                 |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                  | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 221                                                                               | 639                                                                               | 285                                                                               | 93                                                                                | 492                                                                               | 101                                                                               | 529                                                                                | 1416                                                                                | 164                                                                                 | 131                                                                                 | 1285                                                                                | 573                                                                                 |
| Arrive On Green              | 0.06                                                                              | 0.18                                                                              | 0.18                                                                              | 0.05                                                                              | 0.17                                                                              | 0.17                                                                              | 0.15                                                                               | 0.44                                                                                | 0.44                                                                                | 0.07                                                                                | 0.36                                                                                | 0.36                                                                                |
| Sat Flow, veh/h              | 3428                                                                              | 3526                                                                              | 1572                                                                              | 1767                                                                              | 2911                                                                              | 599                                                                               | 3428                                                                               | 3184                                                                                | 368                                                                                 | 1767                                                                                | 3526                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 139                                                                               | 280                                                                               | 185                                                                               | 71                                                                                | 205                                                                               | 207                                                                               | 435                                                                                | 402                                                                                 | 409                                                                                 | 102                                                                                 | 788                                                                                 | 221                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1714                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 1748                                                                              | 1714                                                                               | 1763                                                                                | 1789                                                                                | 1767                                                                                | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 2.9                                                                               | 5.1                                                                               | 5.2                                                                               | 2.9                                                                               | 7.9                                                                               | 8.1                                                                               | 8.9                                                                                | 11.9                                                                                | 12.0                                                                                | 4.1                                                                                 | 13.3                                                                                | 7.6                                                                                 |
| Cycle Q Clear(g_c), s        | 2.9                                                                               | 5.1                                                                               | 5.2                                                                               | 2.9                                                                               | 7.9                                                                               | 8.1                                                                               | 8.9                                                                                | 11.9                                                                                | 12.0                                                                                | 4.1                                                                                 | 13.3                                                                                | 7.6                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.34                                                                              | 1.00                                                                               |                                                                                     | 0.21                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 221                                                                               | 639                                                                               | 285                                                                               | 93                                                                                | 298                                                                               | 296                                                                               | 529                                                                                | 784                                                                                 | 796                                                                                 | 131                                                                                 | 1285                                                                                | 573                                                                                 |
| V/C Ratio(X)                 | 0.63                                                                              | 0.44                                                                              | 0.65                                                                              | 0.77                                                                              | 0.69                                                                              | 0.70                                                                              | 0.82                                                                               | 0.51                                                                                | 0.51                                                                                | 0.78                                                                                | 0.61                                                                                | 0.39                                                                                |
| Avail Cap(c_a), veh/h        | 236                                                                               | 1290                                                                              | 575                                                                               | 156                                                                               | 679                                                                               | 673                                                                               | 589                                                                                | 784                                                                                 | 796                                                                                 | 207                                                                                 | 1285                                                                                | 573                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 33.2                                                                              | 26.5                                                                              | 12.0                                                                              | 34.0                                                                              | 28.4                                                                              | 28.5                                                                              | 29.8                                                                               | 14.5                                                                                | 14.5                                                                                | 33.1                                                                                | 18.9                                                                                | 17.1                                                                                |
| Incr Delay (d2), s/veh       | 4.7                                                                               | 0.5                                                                               | 2.5                                                                               | 12.4                                                                              | 2.8                                                                               | 3.0                                                                               | 8.4                                                                                | 2.4                                                                                 | 2.4                                                                                 | 9.6                                                                                 | 2.2                                                                                 | 2.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.3                                                                               | 2.1                                                                               | 2.9                                                                               | 1.5                                                                               | 3.4                                                                               | 3.5                                                                               | 4.1                                                                                | 4.7                                                                                 | 4.8                                                                                 | 2.0                                                                                 | 5.3                                                                                 | 2.8                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 37.9                                                                              | 26.9                                                                              | 14.5                                                                              | 46.4                                                                              | 31.2                                                                              | 31.5                                                                              | 38.2                                                                               | 16.9                                                                                | 16.9                                                                                | 42.7                                                                                | 21.1                                                                                | 19.0                                                                                |
| LnGrp LOS                    | D                                                                                 | C                                                                                 | B                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                  | B                                                                                   | B                                                                                   | D                                                                                   | C                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 604                                                                               |                                                                                   |                                                                                   | 483                                                                               |                                                                                   |                                                                                   | 1246                                                                               |                                                                                     |                                                                                     | 1111                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 25.7                                                                              |                                                                                   |                                                                                   | 33.6                                                                              |                                                                                   |                                                                                   | 24.3                                                                               |                                                                                     |                                                                                     | 22.7                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                  |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 9.9                                                                               | 36.8                                                                              | 8.3                                                                               | 17.7                                                                              | 15.7                                                                              | 31.0                                                                              | 9.2                                                                                | 16.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 8.5                                                                               | 30.5                                                                              | 6.4                                                                               | 26.6                                                                              | 12.5                                                                              | 26.5                                                                              | 5.0                                                                                | 28.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 6.1                                                                               | 14.0                                                                              | 4.9                                                                               | 7.2                                                                               | 10.9                                                                              | 15.3                                                                              | 4.9                                                                                | 10.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 4.6                                                                               | 0.0                                                                               | 2.2                                                                               | 0.3                                                                               | 4.6                                                                               | 0.0                                                                                | 2.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 25.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary 8: 11th Avenue & 7th Street

11/02/2020

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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 57                                                                                | 138                                                                               | 102                                                                               | 113                                                                               | 141                                                                               | 74                                                                                | 238                                                                                 | 668                                                                                 | 152                                                                                 | 110                                                                                 | 451                                                                                 | 99                                                                                  |
| Future Volume (veh/h)        | 57                                                                                | 138                                                                               | 102                                                                               | 113                                                                               | 141                                                                               | 74                                                                                | 238                                                                                 | 668                                                                                 | 152                                                                                 | 110                                                                                 | 451                                                                                 | 99                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 62                                                                                | 150                                                                               | 111                                                                               | 123                                                                               | 153                                                                               | 80                                                                                | 259                                                                                 | 726                                                                                 | 165                                                                                 | 120                                                                                 | 490                                                                                 | 108                                                                                 |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 171                                                                               | 247                                                                               | 171                                                                               | 155                                                                               | 370                                                                               | 184                                                                               | 303                                                                                 | 1571                                                                                | 701                                                                                 | 153                                                                                 | 1272                                                                                | 567                                                                                 |
| Arrive On Green              | 0.05                                                                              | 0.12                                                                              | 0.12                                                                              | 0.09                                                                              | 0.16                                                                              | 0.16                                                                              | 0.17                                                                                | 0.45                                                                                | 0.45                                                                                | 0.09                                                                                | 0.36                                                                                | 0.36                                                                                |
| Sat Flow, veh/h              | 3428                                                                              | 1990                                                                              | 1380                                                                              | 1767                                                                              | 2280                                                                              | 1134                                                                              | 1767                                                                                | 3526                                                                                | 1572                                                                                | 1767                                                                                | 3526                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 62                                                                                | 132                                                                               | 129                                                                               | 123                                                                               | 116                                                                               | 117                                                                               | 259                                                                                 | 726                                                                                 | 165                                                                                 | 120                                                                                 | 490                                                                                 | 108                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1714                                                                              | 1763                                                                              | 1607                                                                              | 1767                                                                              | 1763                                                                              | 1651                                                                              | 1767                                                                                | 1763                                                                                | 1572                                                                                | 1767                                                                                | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 1.2                                                                               | 5.0                                                                               | 5.4                                                                               | 4.8                                                                               | 4.2                                                                               | 4.5                                                                               | 10.0                                                                                | 10.1                                                                                | 2.8                                                                                 | 4.7                                                                                 | 7.3                                                                                 | 3.3                                                                                 |
| Cycle Q Clear(g_c), s        | 1.2                                                                               | 5.0                                                                               | 5.4                                                                               | 4.8                                                                               | 4.2                                                                               | 4.5                                                                               | 10.0                                                                                | 10.1                                                                                | 2.8                                                                                 | 4.7                                                                                 | 7.3                                                                                 | 3.3                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.86                                                                              | 1.00                                                                              |                                                                                   | 0.69                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 171                                                                               | 219                                                                               | 199                                                                               | 155                                                                               | 286                                                                               | 268                                                                               | 303                                                                                 | 1571                                                                                | 701                                                                                 | 153                                                                                 | 1272                                                                                | 567                                                                                 |
| V/C Ratio(X)                 | 0.36                                                                              | 0.60                                                                              | 0.65                                                                              | 0.79                                                                              | 0.41                                                                              | 0.44                                                                              | 0.85                                                                                | 0.46                                                                                | 0.24                                                                                | 0.78                                                                                | 0.39                                                                                | 0.19                                                                                |
| Avail Cap(c_a), veh/h        | 243                                                                               | 651                                                                               | 594                                                                               | 176                                                                               | 701                                                                               | 657                                                                               | 341                                                                                 | 1571                                                                                | 701                                                                                 | 233                                                                                 | 1272                                                                                | 567                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 32.4                                                                              | 29.2                                                                              | 29.4                                                                              | 31.5                                                                              | 26.5                                                                              | 26.6                                                                              | 28.3                                                                                | 13.6                                                                                | 4.5                                                                                 | 31.5                                                                                | 16.7                                                                                | 15.4                                                                                |
| Incr Delay (d2), s/veh       | 1.3                                                                               | 2.6                                                                               | 3.5                                                                               | 19.3                                                                              | 0.9                                                                               | 1.1                                                                               | 17.2                                                                                | 1.0                                                                                 | 0.8                                                                                 | 9.2                                                                                 | 0.9                                                                                 | 0.7                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.5                                                                               | 2.2                                                                               | 2.2                                                                               | 2.8                                                                               | 1.8                                                                               | 1.8                                                                               | 5.4                                                                                 | 3.8                                                                                 | 1.6                                                                                 | 2.3                                                                                 | 2.8                                                                                 | 1.3                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 33.6                                                                              | 31.8                                                                              | 32.9                                                                              | 50.7                                                                              | 27.4                                                                              | 27.7                                                                              | 45.5                                                                                | 14.6                                                                                | 5.3                                                                                 | 40.7                                                                                | 17.6                                                                                | 16.2                                                                                |
| LnGrp LOS                    | C                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                   | B                                                                                   | A                                                                                   | D                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 323                                                                               |                                                                                   |                                                                                   | 356                                                                               |                                                                                   |                                                                                   | 1150                                                                                |                                                                                     |                                                                                     | 718                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 32.6                                                                              |                                                                                   |                                                                                   | 35.6                                                                              |                                                                                   |                                                                                   | 20.2                                                                                |                                                                                     |                                                                                     | 21.2                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 10.6                                                                              | 35.9                                                                              | 10.7                                                                              | 13.2                                                                              | 16.6                                                                              | 29.9                                                                              | 8.0                                                                                 | 15.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 9.3                                                                               | 29.7                                                                              | 7.0                                                                               | 26.0                                                                              | 13.6                                                                              | 25.4                                                                              | 5.0                                                                                 | 28.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 6.7                                                                               | 12.1                                                                              | 6.8                                                                               | 7.4                                                                               | 12.0                                                                              | 9.3                                                                               | 3.2                                                                                 | 6.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 5.1                                                                               | 0.0                                                                               | 1.3                                                                               | 0.1                                                                               | 3.2                                                                               | 0.0                                                                                 | 1.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 24.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# HCM 6th Signalized Intersection Summary

## 10: 11th Avenue & 5th Street

11/02/2020

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |                                                                                   |  |                                                                                   |  |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)       | 32                                                                                | 0                                                                                 | 11                                                                                | 6                                                                                 | 0                                                                                 | 8                                                                                 | 40                                                                                  | 1387                                                                                | 36                                                                                  | 2                                                                                   | 778                                                                                 | 73                                                                                  |
| Future Volume (veh/h)        | 32                                                                                | 0                                                                                 | 11                                                                                | 6                                                                                 | 0                                                                                 | 8                                                                                 | 40                                                                                  | 1387                                                                                | 36                                                                                  | 2                                                                                   | 778                                                                                 | 73                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 35                                                                                | 0                                                                                 | 12                                                                                | 7                                                                                 | 0                                                                                 | 9                                                                                 | 43                                                                                  | 1508                                                                                | 39                                                                                  | 2                                                                                   | 846                                                                                 | 79                                                                                  |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 191                                                                               | 0                                                                                 | 83                                                                                | 110                                                                               | 8                                                                                 | 45                                                                                | 74                                                                                  | 2566                                                                                | 66                                                                                  | 5                                                                                   | 2438                                                                                | 1087                                                                                |
| Arrive On Green              | 0.05                                                                              | 0.00                                                                              | 0.05                                                                              | 0.05                                                                              | 0.00                                                                              | 0.05                                                                              | 0.04                                                                                | 0.73                                                                                | 0.73                                                                                | 0.00                                                                                | 0.69                                                                                | 0.69                                                                                |
| Sat Flow, veh/h              | 1395                                                                              | 0                                                                                 | 1572                                                                              | 523                                                                               | 145                                                                               | 859                                                                               | 1767                                                                                | 3511                                                                                | 91                                                                                  | 1767                                                                                | 3526                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 35                                                                                | 0                                                                                 | 12                                                                                | 16                                                                                | 0                                                                                 | 0                                                                                 | 43                                                                                  | 756                                                                                 | 791                                                                                 | 2                                                                                   | 846                                                                                 | 79                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1395                                                                              | 0                                                                                 | 1572                                                                              | 1526                                                                              | 0                                                                                 | 0                                                                                 | 1767                                                                                | 1763                                                                                | 1839                                                                                | 1767                                                                                | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 0.8                                                                               | 0.0                                                                               | 0.5                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 1.5                                                                                 | 12.8                                                                                | 12.8                                                                                | 0.1                                                                                 | 6.2                                                                                 | 1.0                                                                                 |
| Cycle Q Clear(g_c), s        | 1.4                                                                               | 0.0                                                                               | 0.5                                                                               | 0.6                                                                               | 0.0                                                                               | 0.0                                                                               | 1.5                                                                                 | 12.8                                                                                | 12.8                                                                                | 0.1                                                                                 | 6.2                                                                                 | 1.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 0.44                                                                              |                                                                                   | 0.56                                                                              | 1.00                                                                                |                                                                                     | 0.05                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 191                                                                               | 0                                                                                 | 83                                                                                | 163                                                                               | 0                                                                                 | 0                                                                                 | 74                                                                                  | 1288                                                                                | 1344                                                                                | 5                                                                                   | 2438                                                                                | 1087                                                                                |
| V/C Ratio(X)                 | 0.18                                                                              | 0.00                                                                              | 0.14                                                                              | 0.10                                                                              | 0.00                                                                              | 0.00                                                                              | 0.58                                                                                | 0.59                                                                                | 0.59                                                                                | 0.41                                                                                | 0.35                                                                                | 0.07                                                                                |
| Avail Cap(c_a), veh/h        | 693                                                                               | 0                                                                                 | 649                                                                               | 698                                                                               | 0                                                                                 | 0                                                                                 | 187                                                                                 | 1288                                                                                | 1344                                                                                | 143                                                                                 | 2438                                                                                | 1087                                                                                |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 29.0                                                                              | 0.0                                                                               | 28.6                                                                              | 28.6                                                                              | 0.0                                                                               | 0.0                                                                               | 29.7                                                                                | 4.0                                                                                 | 4.0                                                                                 | 31.5                                                                                | 4.0                                                                                 | 3.2                                                                                 |
| Incr Delay (d2), s/veh       | 0.5                                                                               | 0.0                                                                               | 0.8                                                                               | 0.3                                                                               | 0.0                                                                               | 0.0                                                                               | 7.0                                                                                 | 2.0                                                                                 | 1.9                                                                                 | 48.3                                                                                | 0.4                                                                                 | 0.1                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.5                                                                               | 0.0                                                                               | 0.2                                                                               | 0.2                                                                               | 0.0                                                                               | 0.0                                                                               | 0.8                                                                                 | 3.2                                                                                 | 3.3                                                                                 | 0.1                                                                                 | 1.5                                                                                 | 0.2                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 29.4                                                                              | 0.0                                                                               | 29.3                                                                              | 28.9                                                                              | 0.0                                                                               | 0.0                                                                               | 36.7                                                                                | 6.0                                                                                 | 5.9                                                                                 | 79.7                                                                                | 4.3                                                                                 | 3.3                                                                                 |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | C                                                                                 | C                                                                                 | A                                                                                 | A                                                                                 | D                                                                                   | A                                                                                   | A                                                                                   | E                                                                                   | A                                                                                   | A                                                                                   |
| Approach Vol, veh/h          | 47                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 1590                                                                                |                                                                                     |                                                                                     | 927                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 29.4                                                                              |                                                                                   |                                                                                   | 28.9                                                                              |                                                                                   |                                                                                   | 6.8                                                                                 |                                                                                     |                                                                                     | 4.4                                                                                 |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 4                                                                                 |                                                                                   | 5                                                                                 | 6                                                                                 | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 4.7                                                                               | 50.7                                                                              | 7.8                                                                               |                                                                                   | 7.1                                                                               | 48.2                                                                              | 7.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 5.1                                                                               | 45.3                                                                              | 26.1                                                                              |                                                                                   | 6.7                                                                               | 43.7                                                                              | 26.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 2.1                                                                               | 14.8                                                                              | 3.4                                                                               |                                                                                   | 3.5                                                                               | 8.2                                                                               | 2.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 14.6                                                                              | 0.1                                                                               |                                                                                   | 0.0                                                                               | 7.4                                                                               | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 6.5                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 11: 11th Avenue & SR 198 WB On Ramp/4th Street

11/02/2020

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |                                                                                   |                                                                                   |  |  |  |  |  |                                                                                     |                                                                                     |  |  |
| Traffic Volume (veh/h)       | 0                                                                                 | 0                                                                                 | 0                                                                                 | 182                                                                               | 25                                                                                | 337                                                                               | 80                                                                                  | 1138                                                                                | 0                                                                                   | 0                                                                                   | 589                                                                                 | 252                                                                                 |
| Future Volume (veh/h)        | 0                                                                                 | 0                                                                                 | 0                                                                                 | 182                                                                               | 25                                                                                | 337                                                                               | 80                                                                                  | 1138                                                                                | 0                                                                                   | 0                                                                                   | 589                                                                                 | 252                                                                                 |
| Initial Q (Qb), veh          |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       |                                                                                   |                                                                                   |                                                                                   | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 0                                                                                   | 0                                                                                   | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         |                                                                                   |                                                                                   |                                                                                   | 198                                                                               | 27                                                                                | 366                                                                               | 87                                                                                  | 1237                                                                                | 0                                                                                   | 0                                                                                   | 640                                                                                 | 274                                                                                 |
| Peak Hour Factor             |                                                                                   |                                                                                   |                                                                                   | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         |                                                                                   |                                                                                   |                                                                                   | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 0                                                                                   | 0                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   |                                                                                   |                                                                                   |                                                                                   | 475                                                                               | 499                                                                               | 422                                                                               | 113                                                                                 | 2175                                                                                | 0                                                                                   | 0                                                                                   | 1748                                                                                | 780                                                                                 |
| Arrive On Green              |                                                                                   |                                                                                   |                                                                                   | 0.27                                                                              | 0.27                                                                              | 0.27                                                                              | 0.06                                                                                | 0.62                                                                                | 0.00                                                                                | 0.00                                                                                | 0.50                                                                                | 0.50                                                                                |
| Sat Flow, veh/h              |                                                                                   |                                                                                   |                                                                                   | 1767                                                                              | 1856                                                                              | 1572                                                                              | 1767                                                                                | 3618                                                                                | 0                                                                                   | 0                                                                                   | 3618                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         |                                                                                   |                                                                                   |                                                                                   | 198                                                                               | 27                                                                                | 366                                                                               | 87                                                                                  | 1237                                                                                | 0                                                                                   | 0                                                                                   | 640                                                                                 | 274                                                                                 |
| Grp Sat Flow(s),veh/h/ln     |                                                                                   |                                                                                   |                                                                                   | 1767                                                                              | 1856                                                                              | 1572                                                                              | 1767                                                                                | 1763                                                                                | 0                                                                                   | 0                                                                                   | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              |                                                                                   |                                                                                   |                                                                                   | 7.3                                                                               | 0.8                                                                               | 17.4                                                                              | 3.8                                                                                 | 16.3                                                                                | 0.0                                                                                 | 0.0                                                                                 | 8.8                                                                                 | 8.4                                                                                 |
| Cycle Q Clear(g_c), s        |                                                                                   |                                                                                   |                                                                                   | 7.3                                                                               | 0.8                                                                               | 17.4                                                                              | 3.8                                                                                 | 16.3                                                                                | 0.0                                                                                 | 0.0                                                                                 | 8.8                                                                                 | 8.4                                                                                 |
| Prop In Lane                 |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 0.00                                                                                | 0.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       |                                                                                   |                                                                                   |                                                                                   | 475                                                                               | 499                                                                               | 422                                                                               | 113                                                                                 | 2175                                                                                | 0                                                                                   | 0                                                                                   | 1748                                                                                | 780                                                                                 |
| V/C Ratio(X)                 |                                                                                   |                                                                                   |                                                                                   | 0.42                                                                              | 0.05                                                                              | 0.87                                                                              | 0.77                                                                                | 0.57                                                                                | 0.00                                                                                | 0.00                                                                                | 0.37                                                                                | 0.35                                                                                |
| Avail Cap(c_a), veh/h        |                                                                                   |                                                                                   |                                                                                   | 730                                                                               | 767                                                                               | 650                                                                               | 258                                                                                 | 2175                                                                                | 0                                                                                   | 0                                                                                   | 1748                                                                                | 780                                                                                 |
| HCM Platoon Ratio            |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     |                                                                                   |                                                                                   |                                                                                   | 23.7                                                                              | 21.3                                                                              | 27.4                                                                              | 36.2                                                                                | 8.9                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 12.2                                                                                | 12.1                                                                                |
| Incr Delay (d2), s/veh       |                                                                                   |                                                                                   |                                                                                   | 0.6                                                                               | 0.0                                                                               | 7.7                                                                               | 10.7                                                                                | 1.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.6                                                                                 | 1.2                                                                                 |
| Initial Q Delay(d3),s/veh    |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     |                                                                                   |                                                                                   |                                                                                   | 2.8                                                                               | 0.3                                                                               | 6.8                                                                               | 1.9                                                                                 | 5.6                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 3.2                                                                                 | 2.9                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         |                                                                                   |                                                                                   |                                                                                   | 24.3                                                                              | 21.4                                                                              | 35.1                                                                              | 46.9                                                                                | 10.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 12.8                                                                                | 13.3                                                                                |
| LnGrp LOS                    |                                                                                   |                                                                                   |                                                                                   | C                                                                                 | C                                                                                 | D                                                                                 | D                                                                                   | A                                                                                   | A                                                                                   | A                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 591                                                                               |                                                                                   |                                                                                     | 1324                                                                                |                                                                                     |                                                                                     | 914                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 30.9                                                                              |                                                                                   |                                                                                     | 12.4                                                                                |                                                                                     |                                                                                     | 13.0                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 2                                                                                 |                                                                                   |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   | 6                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 53.0                                                                              |                                                                                   |                                                                                   | 9.5                                                                               |                                                                                   |                                                                                   | 43.5                                                                                |                                                                                     |                                                                                     | 25.6                                                                                |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               |                                                                                   |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                   | 4.5                                                                                 |                                                                                     |                                                                                     | 4.5                                                                                 |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 48.5                                                                              |                                                                                   |                                                                                   | 11.5                                                                              |                                                                                   |                                                                                   | 32.5                                                                                |                                                                                     |                                                                                     | 32.5                                                                                |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 18.3                                                                              |                                                                                   |                                                                                   | 5.8                                                                               |                                                                                   |                                                                                   | 10.8                                                                                |                                                                                     |                                                                                     | 19.4                                                                                |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 11.4                                                                              |                                                                                   |                                                                                   | 0.1                                                                               |                                                                                   |                                                                                   | 5.3                                                                                 |                                                                                     |                                                                                     | 1.7                                                                                 |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 16.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 12: 11th Avenue & SR 198 EB Off Ramp/3rd Street

11/02/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |                                                                                   |                                                                                   |                                                                                   |                                                                                    |  |  |  |  |                                                                                     |
| Traffic Volume (veh/h)       | 373                                                                               | 216                                                                               | 131                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 849                                                                                 | 207                                                                                 | 127                                                                                 | 649                                                                                 | 0                                                                                   |
| Future Volume (veh/h)        | 373                                                                               | 216                                                                               | 131                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 849                                                                                 | 207                                                                                 | 127                                                                                 | 649                                                                                 | 0                                                                                   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                 |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 0                                                                                   |
| Adj Flow Rate, veh/h         | 405                                                                               | 235                                                                               | 142                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 923                                                                                 | 225                                                                                 | 138                                                                                 | 705                                                                                 | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 0                                                                                   |
| Cap, veh/h                   | 445                                                                               | 258                                                                               | 615                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1247                                                                                | 556                                                                                 | 171                                                                                 | 1775                                                                                | 0                                                                                   |
| Arrive On Green              | 0.39                                                                              | 0.39                                                                              | 0.39                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.35                                                                                | 0.35                                                                                | 0.10                                                                                | 0.50                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 1138                                                                              | 660                                                                               | 1572                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 3618                                                                                | 1572                                                                                | 1767                                                                                | 3618                                                                                | 0                                                                                   |
| Grp Volume(v), veh/h         | 640                                                                               | 0                                                                                 | 142                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 923                                                                                 | 225                                                                                 | 138                                                                                 | 705                                                                                 | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1799                                                                              | 0                                                                                 | 1572                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1763                                                                                | 1572                                                                                | 1767                                                                                | 1763                                                                                | 0                                                                                   |
| Q Serve(g_s), s              | 28.7                                                                              | 0.0                                                                               | 5.2                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 19.5                                                                                | 9.2                                                                                 | 6.5                                                                                 | 10.6                                                                                | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 28.7                                                                              | 0.0                                                                               | 5.2                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 19.5                                                                                | 9.2                                                                                 | 6.5                                                                                 | 10.6                                                                                | 0.0                                                                                 |
| Prop In Lane                 | 0.63                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.00                                                                                |
| Lane Grp Cap(c), veh/h       | 703                                                                               | 0                                                                                 | 615                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1247                                                                                | 556                                                                                 | 171                                                                                 | 1775                                                                                | 0                                                                                   |
| V/C Ratio(X)                 | 0.91                                                                              | 0.00                                                                              | 0.23                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.74                                                                                | 0.40                                                                                | 0.81                                                                                | 0.40                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 804                                                                               | 0                                                                                 | 703                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1247                                                                                | 556                                                                                 | 212                                                                                 | 1775                                                                                | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 24.5                                                                              | 0.0                                                                               | 17.4                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 24.1                                                                                | 20.8                                                                                | 37.7                                                                                | 13.1                                                                                | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 13.3                                                                              | 0.0                                                                               | 0.2                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 4.0                                                                                 | 2.2                                                                                 | 16.8                                                                                | 0.7                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 13.3                                                                              | 0.0                                                                               | 1.7                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 8.1                                                                                 | 3.5                                                                                 | 3.6                                                                                 | 4.1                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 37.8                                                                              | 0.0                                                                               | 17.6                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 28.1                                                                                | 22.9                                                                                | 54.5                                                                                | 13.8                                                                                | 0.0                                                                                 |
| LnGrp LOS                    | D                                                                                 | A                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   | A                                                                                  | C                                                                                   | C                                                                                   | D                                                                                   | B                                                                                   | A                                                                                   |
| Approach Vol, veh/h          | 782                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 1148                                                                               |                                                                                     |                                                                                     | 843                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 34.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 27.1                                                                               |                                                                                     |                                                                                     | 20.5                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | C                                                                                  |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 12.7                                                                              | 34.7                                                                              | 37.8                                                                              |                                                                                   | 47.4                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 10.2                                                                              | 28.2                                                                              | 38.1                                                                              |                                                                                   | 42.9                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 8.5                                                                               | 21.5                                                                              | 30.7                                                                              |                                                                                   | 12.6                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 3.6                                                                               | 2.7                                                                               |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 27.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

HCM 6th AWSC  
5: Campus Dr/Campus Drive & 7th Street

11/02/2020

| Intersection              |      |
|---------------------------|------|
| Intersection Delay, s/veh | 12.1 |
| Intersection LOS          | B    |

| Movement            | EBL                                                                               | EBT                                                                               | EBR  | WBL                                                                               | WBT                                                                               | WBR  | NBL  | NBT                                                                                 | NBR  | SBL  | SBT                                                                                 | SBR  |
|---------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|
| Lane Configurations |  |  |      |  |  |      |      |  |      |      |  |      |
| Traffic Vol, veh/h  | 127                                                                               | 181                                                                               | 25   | 28                                                                                | 223                                                                               | 48   | 34   | 87                                                                                  | 22   | 34   | 46                                                                                  | 51   |
| Future Vol, veh/h   | 127                                                                               | 181                                                                               | 25   | 28                                                                                | 223                                                                               | 48   | 34   | 87                                                                                  | 22   | 34   | 46                                                                                  | 51   |
| Peak Hour Factor    | 0.92                                                                              | 0.92                                                                              | 0.92 | 0.92                                                                              | 0.92                                                                              | 0.92 | 0.92 | 0.92                                                                                | 0.92 | 0.92 | 0.92                                                                                | 0.92 |
| Heavy Vehicles, %   | 3                                                                                 | 3                                                                                 | 3    | 3                                                                                 | 3                                                                                 | 3    | 3    | 3                                                                                   | 3    | 3    | 3                                                                                   | 3    |
| Mvmt Flow           | 138                                                                               | 197                                                                               | 27   | 30                                                                                | 242                                                                               | 52   | 37   | 95                                                                                  | 24   | 37   | 50                                                                                  | 55   |
| Number of Lanes     | 1                                                                                 | 1                                                                                 | 0    | 1                                                                                 | 1                                                                                 | 0    | 0    | 1                                                                                   | 0    | 0    | 1                                                                                   | 0    |

| Approach                   | EB   | WB   | NB   | SB   |
|----------------------------|------|------|------|------|
| Opposing Approach          | WB   | EB   | SB   | NB   |
| Opposing Lanes             | 2    | 2    | 1    | 1    |
| Conflicting Approach Left  | SB   | NB   | EB   | WB   |
| Conflicting Lanes Left     | 1    | 1    | 2    | 2    |
| Conflicting Approach Right | NB   | SB   | WB   | EB   |
| Conflicting Lanes Right    | 1    | 1    | 2    | 2    |
| HCM Control Delay          | 11.7 | 13.5 | 11.2 | 10.8 |
| HCM LOS                    | B    | B    | B    | B    |

| Lane                   | NBLn1 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | SBLn1 |
|------------------------|-------|-------|-------|-------|-------|-------|
| Vol Left, %            | 24%   | 100%  | 0%    | 100%  | 0%    | 26%   |
| Vol Thru, %            | 61%   | 0%    | 88%   | 0%    | 82%   | 35%   |
| Vol Right, %           | 15%   | 0%    | 12%   | 0%    | 18%   | 39%   |
| Sign Control           | Stop  | Stop  | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 143   | 127   | 206   | 28    | 271   | 131   |
| LT Vol                 | 34    | 127   | 0     | 28    | 0     | 34    |
| Through Vol            | 87    | 0     | 181   | 0     | 223   | 46    |
| RT Vol                 | 22    | 0     | 25    | 0     | 48    | 51    |
| Lane Flow Rate         | 155   | 138   | 224   | 30    | 295   | 142   |
| Geometry Grp           | 2     | 7     | 7     | 7     | 7     | 2     |
| Degree of Util (X)     | 0.26  | 0.247 | 0.363 | 0.055 | 0.479 | 0.234 |
| Departure Headway (Hd) | 6.014 | 6.43  | 5.837 | 6.489 | 5.856 | 5.913 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 595   | 558   | 616   | 551   | 616   | 605   |
| Service Time           | 4.074 | 4.178 | 3.584 | 4.237 | 3.604 | 3.976 |
| HCM Lane V/C Ratio     | 0.261 | 0.247 | 0.364 | 0.054 | 0.479 | 0.235 |
| HCM Control Delay      | 11.2  | 11.3  | 11.9  | 9.6   | 13.9  | 10.8  |
| HCM Lane LOS           | B     | B     | B     | A     | B     | B     |
| HCM 95th-tile Q        | 1     | 1     | 1.7   | 0.2   | 2.6   | 0.9   |

HCM 6th TWSC  
1: 12th Avenue & Glendale Avenue

11/02/2020

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 66.6 |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      |      | ↰    |      |      | ↰    |      | ↑↑↑  |      | ↰    | ↑↑↑  |      |
| Traffic Vol, veh/h       | 0    | 0    | 255  | 0    | 0    | 152  | 0    | 2631 | 45   | 56   | 2735 | 249  |
| Future Vol, veh/h        | 0    | 0    | 255  | 0    | 0    | 152  | 0    | 2631 | 45   | 56   | 2735 | 249  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | 0    | -    | -    | 0    | -    | -    | -    | 125  | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    |
| Mvmt Flow                | 0    | 0    | 277  | 0    | 0    | 165  | 0    | 2860 | 49   | 61   | 2973 | 271  |

| Major/Minor          | Minor2 |   | Minor1 |   | Major1 |       | Major2 |      |
|----------------------|--------|---|--------|---|--------|-------|--------|------|
| Conflicting Flow All | -      | - | 1622   | - | -      | 1455  | -      | 0    |
| Stage 1              | -      | - | -      | - | -      | -     | -      | -    |
| Stage 2              | -      | - | -      | - | -      | -     | -      | -    |
| Critical Hdwy        | -      | - | 7.16   | - | -      | 7.16  | -      | 5.36 |
| Critical Hdwy Stg 1  | -      | - | -      | - | -      | -     | -      | -    |
| Critical Hdwy Stg 2  | -      | - | -      | - | -      | -     | -      | -    |
| Follow-up Hdwy       | -      | - | 3.93   | - | -      | 3.93  | -      | 3.13 |
| Pot Cap-1 Maneuver   | 0      | 0 | ~ 78   | 0 | 0      | ~ 101 | 0      | ~ 42 |
| Stage 1              | 0      | 0 | -      | 0 | 0      | -     | 0      | -    |
| Stage 2              | 0      | 0 | -      | 0 | 0      | -     | 0      | -    |
| Platoon blocked, %   | -      | - | -      | - | -      | -     | -      | -    |
| Mov Cap-1 Maneuver   | -      | - | ~ 78   | - | -      | ~ 101 | -      | ~ 42 |
| Mov Cap-2 Maneuver   | -      | - | -      | - | -      | -     | -      | -    |
| Stage 1              | -      | - | -      | - | -      | -     | -      | -    |
| Stage 2              | -      | - | -      | - | -      | -     | -      | -    |

| Approach              | EB     | WB    | NB | SB  |
|-----------------------|--------|-------|----|-----|
| HCM Control Delay, \$ | 1261.2 | 399.8 | 0  | 8.3 |
| HCM LOS               | F      | F     |    |     |

| Minor Lane/Major Mvmt | NBT | NBR | EBLn1WBLn1                  | SBL | SBT | SBR |
|-----------------------|-----|-----|-----------------------------|-----|-----|-----|
| Capacity (veh/h)      | -   | -   | 78 101 ~ 42                 | -   | -   | -   |
| HCM Lane V/C Ratio    | -   | -   | 3.554 1.636 1.449           | -   | -   | -   |
| HCM Control Delay (s) | -   | -   | \$ 1261.2 \$ 399.8 \$ 448.9 | -   | -   | -   |
| HCM Lane LOS          | -   | -   | F F F                       | -   | -   | -   |
| HCM 95th %tile Q(veh) | -   | -   | 28.5 12.8 6.1               | -   | -   | -   |

| Notes                      |                        |                            |                                |
|----------------------------|------------------------|----------------------------|--------------------------------|
| ~: Volume exceeds capacity | \$: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

HCM 6th TWSC  
6: Campus Dr & 6th Street

11/02/2020

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 7.8  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 19   | 12   | 0    | 0    | 6    | 107  | 0    | 2    | 0    | 94   | 2    | 22   |
| Future Vol, veh/h        | 19   | 12   | 0    | 0    | 6    | 107  | 0    | 2    | 0    | 94   | 2    | 22   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    |
| Mvmt Flow                | 21   | 13   | 0    | 0    | 7    | 116  | 0    | 2    | 0    | 102  | 2    | 24   |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       | Major2 |   |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|--------|---|---|-------|---|---|
| Conflicting Flow All | 282    | 220   | 14     | 227   | 232    | 2     | 26     | 0 | 0 | 2     | 0 | 0 |
| Stage 1              | 218    | 218   | -      | 2     | 2      | -     | -      | - | - | -     | - | - |
| Stage 2              | 64     | 2     | -      | 225   | 230    | -     | -      | - | - | -     | - | - |
| Critical Hdwy        | 7.13   | 6.53  | 6.23   | 7.13  | 6.53   | 6.23  | 4.13   | - | - | 4.13  | - | - |
| Critical Hdwy Stg 1  | 6.13   | 5.53  | -      | 6.13  | 5.53   | -     | -      | - | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.13   | 5.53  | -      | 6.13  | 5.53   | -     | -      | - | - | -     | - | - |
| Follow-up Hdwy       | 3.527  | 4.027 | 3.327  | 3.527 | 4.027  | 3.327 | 2.227  | - | - | 2.227 | - | - |
| Pot Cap-1 Maneuver   | 668    | 677   | 1063   | 726   | 666    | 1079  | 1582   | - | - | 1614  | - | - |
| Stage 1              | 782    | 721   | -      | 1018  | 892    | -     | -      | - | - | -     | - | - |
| Stage 2              | 944    | 892   | -      | 775   | 712    | -     | -      | - | - | -     | - | - |
| Platoon blocked, %   |        |       |        |       |        |       |        | - | - | -     | - | - |
| Mov Cap-1 Maneuver   | 562    | 634   | 1063   | 680   | 623    | 1079  | 1582   | - | - | 1614  | - | - |
| Mov Cap-2 Maneuver   | 562    | 634   | -      | 680   | 623    | -     | -      | - | - | -     | - | - |
| Stage 1              | 782    | 675   | -      | 1018  | 892    | -     | -      | - | - | -     | - | - |
| Stage 2              | 836    | 892   | -      | 711   | 666    | -     | -      | - | - | -     | - | - |

| Approach             | EB   |  | WB  |  | NB |  | SB  |  |
|----------------------|------|--|-----|--|----|--|-----|--|
| HCM Control Delay, s | 11.5 |  | 8.9 |  | 0  |  | 5.9 |  |
| HCM LOS              | B    |  | A   |  |    |  |     |  |

| Minor Lane/Major Mvmt | NBL  | NBT | NBR | EBLn1WBLn1        | SBL  | SBT | SBR |
|-----------------------|------|-----|-----|-------------------|------|-----|-----|
| Capacity (veh/h)      | 1582 | -   | -   | 588 1039          | 1614 | -   | -   |
| HCM Lane V/C Ratio    | -    | -   | -   | 0.057 0.118 0.063 | -    | -   | -   |
| HCM Control Delay (s) | 0    | -   | -   | 11.5 8.9 7.4      | 0    | -   | -   |
| HCM Lane LOS          | A    | -   | -   | B A A             | A    | -   | -   |
| HCM 95th %tile Q(veh) | 0    | -   | -   | 0.2 0.4 0.2       | -    | -   | -   |

| Intersection             |        |      |        |            |        |       |        |      |      |      |      |      |
|--------------------------|--------|------|--------|------------|--------|-------|--------|------|------|------|------|------|
| Int Delay, s/veh         | 7      |      |        |            |        |       |        |      |      |      |      |      |
| Movement                 | EBL    | EBT  | EBR    | WBL        | WBT    | WBR   | NBL    | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |        |      | ↗      |            |        | ↗     | ↗      | ↗↖   |      | ↗    | ↗↖   |      |
| Traffic Vol, veh/h       | 0      | 0    | 105    | 0          | 0      | 249   | 152    | 1580 | 162  | 165  | 1679 | 12   |
| Future Vol, veh/h        | 0      | 0    | 105    | 0          | 0      | 249   | 152    | 1580 | 162  | 165  | 1679 | 12   |
| Conflicting Peds, #/hr   | 0      | 0    | 0      | 0          | 0      | 0     | 0      | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop   | Stop | Stop   | Stop       | Stop   | Stop  | Free   | Free | Free | Free | Free | Free |
| RT Channelized           | -      | -    | None   | -          | -      | None  | -      | -    | None | -    | -    | None |
| Storage Length           | -      | -    | 0      | -          | -      | 0     | 75     | -    | -    | 125  | -    | -    |
| Veh in Median Storage, # | -      | 0    | -      | -          | 0      | -     | -      | 0    | -    | -    | 0    | -    |
| Grade, %                 | -      | 0    | -      | -          | 0      | -     | -      | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 97     | 97   | 97     | 97         | 97     | 97    | 97     | 97   | 97   | 97   | 97   | 97   |
| Heavy Vehicles, %        | 3      | 3    | 3      | 3          | 3      | 3     | 3      | 3    | 3    | 3    | 3    | 3    |
| Mvmt Flow                | 0      | 0    | 108    | 0          | 0      | 257   | 157    | 1629 | 167  | 170  | 1731 | 12   |
|                          |        |      |        |            |        |       |        |      |      |      |      |      |
| Major/Minor              | Minor2 |      | Minor1 |            | Major1 |       | Major2 |      |      |      |      |      |
| Conflicting Flow All     | -      | -    | 872    | -          | -      | 898   | 1743   | 0    | 0    | 1796 | 0    | 0    |
| Stage 1                  | -      | -    | -      | -          | -      | -     | -      | -    | -    | -    | -    | -    |
| Stage 2                  | -      | -    | -      | -          | -      | -     | -      | -    | -    | -    | -    | -    |
| Critical Hdwy            | -      | -    | 6.96   | -          | -      | 6.96  | 4.16   | -    | -    | 4.16 | -    | -    |
| Critical Hdwy Stg 1      | -      | -    | -      | -          | -      | -     | -      | -    | -    | -    | -    | -    |
| Critical Hdwy Stg 2      | -      | -    | -      | -          | -      | -     | -      | -    | -    | -    | -    | -    |
| Follow-up Hdwy           | -      | -    | 3.33   | -          | -      | 3.33  | 2.23   | -    | -    | 2.23 | -    | -    |
| Pot Cap-1 Maneuver       | 0      | 0    | 292    | 0          | 0      | 280   | 352    | -    | -    | 336  | -    | -    |
| Stage 1                  | 0      | 0    | -      | 0          | 0      | -     | -      | -    | -    | -    | -    | -    |
| Stage 2                  | 0      | 0    | -      | 0          | 0      | -     | -      | -    | -    | -    | -    | -    |
| Platoon blocked, %       |        |      |        |            |        |       |        | -    | -    |      | -    | -    |
| Mov Cap-1 Maneuver       | -      | -    | 292    | -          | -      | 280   | 352    | -    | -    | 336  | -    | -    |
| Mov Cap-2 Maneuver       | -      | -    | -      | -          | -      | -     | -      | -    | -    | -    | -    | -    |
| Stage 1                  | -      | -    | -      | -          | -      | -     | -      | -    | -    | -    | -    | -    |
| Stage 2                  | -      | -    | -      | -          | -      | -     | -      | -    | -    | -    | -    | -    |
|                          |        |      |        |            |        |       |        |      |      |      |      |      |
| Approach                 | EB     |      | WB     |            | NB     |       | SB     |      |      |      |      |      |
| HCM Control Delay, s     | 24.4   |      | 74.3   |            | 1.9    |       | 2.3    |      |      |      |      |      |
| HCM LOS                  | C      |      | F      |            |        |       |        |      |      |      |      |      |
|                          |        |      |        |            |        |       |        |      |      |      |      |      |
| Minor Lane/Major Mvmt    | NBL    | NBT  | NBR    | EBLn1WBLn1 | SBL    | SBT   | SBR    |      |      |      |      |      |
| Capacity (veh/h)         | 352    | -    | -      | 292        | 280    | 336   | -      | -    |      |      |      |      |
| HCM Lane V/C Ratio       | 0.445  | -    | -      | 0.371      | 0.917  | 0.506 | -      | -    |      |      |      |      |
| HCM Control Delay (s)    | 23.2   | -    | -      | 24.4       | 74.3   | 26.2  | -      | -    |      |      |      |      |
| HCM Lane LOS             | C      | -    | -      | C          | F      | D     | -      | -    |      |      |      |      |
| HCM 95th %tile Q(veh)    | 2.2    | -    | -      | 1.6        | 8.5    | 2.7   | -      | -    |      |      |      |      |



# HCM 6th Signalized Intersection Summary

## 2: SR 198 WB Ramps & 12th Avenue

11/02/2020

|                              |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | WBL                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                                 | SBR                                                                                 | NEL                                                                                 | NER                                                                                 |
| Lane Configurations          |  |  |  |  |                                                                                   |                                                                                   |  |  |                                                                                     |                                                                                     |
| Traffic Volume (veh/h)       | 221                                                                               | 835                                                                               | 71                                                                                | 1847                                                                              | 0                                                                                 | 0                                                                                 | 1983                                                                                | 1016                                                                                | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 221                                                                               | 835                                                                               | 71                                                                                | 1847                                                                              | 0                                                                                 | 0                                                                                 | 1983                                                                                | 1016                                                                                | 0                                                                                   | 0                                                                                   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 0                                                                                 | 0                                                                                 | 1856                                                                                | 1856                                                                                |                                                                                     |                                                                                     |
| Adj Flow Rate, veh/h         | 240                                                                               | 908                                                                               | 77                                                                                | 2008                                                                              | 0                                                                                 | 0                                                                                 | 2155                                                                                | 1104                                                                                |                                                                                     |                                                                                     |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                |                                                                                     |                                                                                     |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 3                                                                                   | 3                                                                                   |                                                                                     |                                                                                     |
| Cap, veh/h                   | 434                                                                               | 773                                                                               | 81                                                                                | 2394                                                                              | 0                                                                                 | 0                                                                                 | 2101                                                                                | 937                                                                                 |                                                                                     |                                                                                     |
| Arrive On Green              | 0.25                                                                              | 0.25                                                                              | 0.05                                                                              | 0.68                                                                              | 0.00                                                                              | 0.00                                                                              | 0.60                                                                                | 0.60                                                                                |                                                                                     |                                                                                     |
| Sat Flow, veh/h              | 1767                                                                              | 3145                                                                              | 1767                                                                              | 3618                                                                              | 0                                                                                 | 0                                                                                 | 3618                                                                                | 1572                                                                                |                                                                                     |                                                                                     |
| Grp Volume(v), veh/h         | 240                                                                               | 908                                                                               | 77                                                                                | 2008                                                                              | 0                                                                                 | 0                                                                                 | 2155                                                                                | 1104                                                                                |                                                                                     |                                                                                     |
| Grp Sat Flow(s),veh/h/ln     | 1767                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 0                                                                                 | 0                                                                                 | 1763                                                                                | 1572                                                                                |                                                                                     |                                                                                     |
| Q Serve(g_s), s              | 14.2                                                                              | 29.5                                                                              | 5.2                                                                               | 50.9                                                                              | 0.0                                                                               | 0.0                                                                               | 71.5                                                                                | 71.5                                                                                |                                                                                     |                                                                                     |
| Cycle Q Clear(g_c), s        | 14.2                                                                              | 29.5                                                                              | 5.2                                                                               | 50.9                                                                              | 0.0                                                                               | 0.0                                                                               | 71.5                                                                                | 71.5                                                                                |                                                                                     |                                                                                     |
| Prop In Lane                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 0.00                                                                              |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |
| Lane Grp Cap(c), veh/h       | 434                                                                               | 773                                                                               | 81                                                                                | 2394                                                                              | 0                                                                                 | 0                                                                                 | 2101                                                                                | 937                                                                                 |                                                                                     |                                                                                     |
| V/C Ratio(X)                 | 0.55                                                                              | 1.17                                                                              | 0.95                                                                              | 0.84                                                                              | 0.00                                                                              | 0.00                                                                              | 1.03                                                                                | 1.18                                                                                |                                                                                     |                                                                                     |
| Avail Cap(c_a), veh/h        | 434                                                                               | 773                                                                               | 81                                                                                | 2394                                                                              | 0                                                                                 | 0                                                                                 | 2101                                                                                | 937                                                                                 |                                                                                     |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Uniform Delay (d), s/veh     | 39.5                                                                              | 45.3                                                                              | 57.1                                                                              | 14.3                                                                              | 0.0                                                                               | 0.0                                                                               | 24.2                                                                                | 24.2                                                                                |                                                                                     |                                                                                     |
| Incr Delay (d2), s/veh       | 1.5                                                                               | 91.9                                                                              | 83.2                                                                              | 3.7                                                                               | 0.0                                                                               | 0.0                                                                               | 26.5                                                                                | 91.4                                                                                |                                                                                     |                                                                                     |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |
| %ile BackOfQ(50%),veh/ln     | 6.2                                                                               | 20.9                                                                              | 4.2                                                                               | 18.4                                                                              | 0.0                                                                               | 0.0                                                                               | 34.1                                                                                | 47.3                                                                                |                                                                                     |                                                                                     |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 41.0                                                                              | 137.1                                                                             | 140.3                                                                             | 18.1                                                                              | 0.0                                                                               | 0.0                                                                               | 50.8                                                                                | 115.6                                                                               |                                                                                     |                                                                                     |
| LnGrp LOS                    | D                                                                                 | F                                                                                 | F                                                                                 | B                                                                                 | A                                                                                 | A                                                                                 | F                                                                                   | F                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          | 1148                                                                              |                                                                                   |                                                                                   | 2085                                                                              |                                                                                   |                                                                                   | 3259                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 117.0                                                                             |                                                                                   |                                                                                   | 22.6                                                                              |                                                                                   |                                                                                   | 72.8                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | F                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | E                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 2                                                                                 |                                                                                   | 5                                                                                 |                                                                                   | 6                                                                                 |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 86.0                                                                              |                                                                                   | 10.0                                                                              |                                                                                   | 76.0                                                                              |                                                                                   | 34.0                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 81.5                                                                              |                                                                                   | 5.5                                                                               |                                                                                   | 71.5                                                                              |                                                                                   | 29.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 52.9                                                                              |                                                                                   | 7.2                                                                               |                                                                                   | 73.5                                                                              |                                                                                   | 31.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 19.4                                                                              |                                                                                   | 0.0                                                                               |                                                                                   | 0.0                                                                               |                                                                                   | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 64.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary 3: 12th Avenue & SR 198 EB Off Ramps

11/02/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |  |  |                                                                                     |  |  |
| Traffic Volume (veh/h)       | 883                                                                               | 0                                                                                 | 76                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 1020                                                                                | 221                                                                                 | 0                                                                                   | 1362                                                                                | 856                                                                                 |
| Future Volume (veh/h)        | 883                                                                               | 0                                                                                 | 76                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 1020                                                                                | 221                                                                                 | 0                                                                                   | 1362                                                                                | 856                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 0                                                                                 | 1856                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1856                                                                                | 1856                                                                                | 0                                                                                   | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 949                                                                               | 0                                                                                 | 82                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1097                                                                                | 0                                                                                   | 0                                                                                   | 1465                                                                                | 0                                                                                   |
| Peak Hour Factor             | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 0                                                                                 | 3                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 3                                                                                   | 3                                                                                   | 0                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 1089                                                                              | 0                                                                                 | 499                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2029                                                                                |                                                                                     | 0                                                                                   | 2029                                                                                |                                                                                     |
| Arrive On Green              | 0.32                                                                              | 0.00                                                                              | 0.32                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 0.58                                                                                | 0.00                                                                                | 0.00                                                                                | 0.58                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 3428                                                                              | 0                                                                                 | 1572                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 3618                                                                                | 1572                                                                                | 0                                                                                   | 3618                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 949                                                                               | 0                                                                                 | 82                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1097                                                                                | 0                                                                                   | 0                                                                                   | 1465                                                                                | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1714                                                                              | 0                                                                                 | 1572                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1763                                                                                | 1572                                                                                | 0                                                                                   | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 22.0                                                                              | 0.0                                                                               | 3.2                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 16.2                                                                                | 0.0                                                                                 | 0.0                                                                                 | 25.4                                                                                | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 22.0                                                                              | 0.0                                                                               | 3.2                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 16.2                                                                                | 0.0                                                                                 | 0.0                                                                                 | 25.4                                                                                | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                |                                                                                     | 1.00                                                                                | 0.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 1089                                                                              | 0                                                                                 | 499                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2029                                                                                |                                                                                     | 0                                                                                   | 2029                                                                                |                                                                                     |
| V/C Ratio(X)                 | 0.87                                                                              | 0.00                                                                              | 0.16                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 0.54                                                                                |                                                                                     | 0.00                                                                                | 0.72                                                                                |                                                                                     |
| Avail Cap(c_a), veh/h        | 1322                                                                              | 0                                                                                 | 607                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 2029                                                                                |                                                                                     | 0                                                                                   | 2029                                                                                |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 27.1                                                                              | 0.0                                                                               | 20.7                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 11.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 13.0                                                                                | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 5.7                                                                               | 0.0                                                                               | 0.2                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 1.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 2.3                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 9.0                                                                               | 0.0                                                                               | 1.1                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 5.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 8.9                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 32.8                                                                              | 0.0                                                                               | 20.9                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 12.1                                                                                | 0.0                                                                                 | 0.0                                                                                 | 15.2                                                                                | 0.0                                                                                 |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | A                                                                                   | B                                                                                   |                                                                                     | A                                                                                   | B                                                                                   |                                                                                     |
| Approach Vol, veh/h          | 1031                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 1097                                                                                |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 31.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 12.1                                                                                |                                                                                     |                                                                                     | 15.2                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 53.0                                                                              |                                                                                   |                                                                                   | 31.3                                                                              |                                                                                   |                                                                                   | 53.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               |                                                                                   |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                   | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 48.5                                                                              |                                                                                   |                                                                                   | 32.5                                                                              |                                                                                   |                                                                                   | 48.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 18.2                                                                              |                                                                                   |                                                                                   | 24.0                                                                              |                                                                                   |                                                                                   | 27.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 8.8                                                                               |                                                                                   |                                                                                   | 2.8                                                                               |                                                                                   |                                                                                   | 11.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## Intersection Summary

|                    |      |
|--------------------|------|
| HCM 6th Ctrl Delay | 19.0 |
| HCM 6th LOS        | B    |

## Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

# HCM 6th Signalized Intersection Summary

## 4: Campus Drive & Lacey Boulevard

11/02/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 46                                                                                | 1144                                                                              | 51                                                                                | 80                                                                                | 1268                                                                              | 66                                                                                | 56                                                                                  | 105                                                                                 | 182                                                                                 | 155                                                                                 | 133                                                                                 | 53                                                                                  |
| Future Volume (veh/h)        | 46                                                                                | 1144                                                                              | 51                                                                                | 80                                                                                | 1268                                                                              | 66                                                                                | 56                                                                                  | 105                                                                                 | 182                                                                                 | 155                                                                                 | 133                                                                                 | 53                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 50                                                                                | 1243                                                                              | 55                                                                                | 87                                                                                | 1378                                                                              | 72                                                                                | 61                                                                                  | 114                                                                                 | 198                                                                                 | 168                                                                                 | 145                                                                                 | 58                                                                                  |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 70                                                                                | 1277                                                                              | 570                                                                               | 102                                                                               | 1341                                                                              | 598                                                                               | 78                                                                                  | 172                                                                                 | 298                                                                                 | 173                                                                                 | 623                                                                                 | 528                                                                                 |
| Arrive On Green              | 0.04                                                                              | 0.36                                                                              | 0.36                                                                              | 0.06                                                                              | 0.38                                                                              | 0.38                                                                              | 0.04                                                                                | 0.28                                                                                | 0.28                                                                                | 0.10                                                                                | 0.34                                                                                | 0.34                                                                                |
| Sat Flow, veh/h              | 1767                                                                              | 3526                                                                              | 1572                                                                              | 1767                                                                              | 3526                                                                              | 1572                                                                              | 1767                                                                                | 608                                                                                 | 1057                                                                                | 1767                                                                                | 1856                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 50                                                                                | 1243                                                                              | 55                                                                                | 87                                                                                | 1378                                                                              | 72                                                                                | 61                                                                                  | 0                                                                                   | 312                                                                                 | 168                                                                                 | 145                                                                                 | 58                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1767                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                                | 0                                                                                   | 1665                                                                                | 1767                                                                                | 1856                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 2.5                                                                               | 31.3                                                                              | 2.1                                                                               | 4.4                                                                               | 34.2                                                                              | 1.8                                                                               | 3.1                                                                                 | 0.0                                                                                 | 14.9                                                                                | 8.5                                                                                 | 5.1                                                                                 | 2.3                                                                                 |
| Cycle Q Clear(g_c), s        | 2.5                                                                               | 31.3                                                                              | 2.1                                                                               | 4.4                                                                               | 34.2                                                                              | 1.8                                                                               | 3.1                                                                                 | 0.0                                                                                 | 14.9                                                                                | 8.5                                                                                 | 5.1                                                                                 | 2.3                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 0.63                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 70                                                                                | 1277                                                                              | 570                                                                               | 102                                                                               | 1341                                                                              | 598                                                                               | 78                                                                                  | 0                                                                                   | 470                                                                                 | 173                                                                                 | 623                                                                                 | 528                                                                                 |
| V/C Ratio(X)                 | 0.71                                                                              | 0.97                                                                              | 0.10                                                                              | 0.85                                                                              | 1.03                                                                              | 0.12                                                                              | 0.78                                                                                | 0.00                                                                                | 0.66                                                                                | 0.97                                                                                | 0.23                                                                                | 0.11                                                                                |
| Avail Cap(c_a), veh/h        | 98                                                                                | 1277                                                                              | 570                                                                               | 102                                                                               | 1341                                                                              | 598                                                                               | 173                                                                                 | 0                                                                                   | 470                                                                                 | 173                                                                                 | 623                                                                                 | 528                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 42.7                                                                              | 28.3                                                                              | 19.0                                                                              | 42.0                                                                              | 27.9                                                                              | 8.4                                                                               | 42.6                                                                                | 0.0                                                                                 | 28.5                                                                                | 40.5                                                                                | 21.5                                                                                | 20.6                                                                                |
| Incr Delay (d2), s/veh       | 13.4                                                                              | 19.1                                                                              | 0.1                                                                               | 46.1                                                                              | 31.9                                                                              | 0.1                                                                               | 15.1                                                                                | 0.0                                                                                 | 7.2                                                                                 | 60.1                                                                                | 0.9                                                                                 | 0.4                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.3                                                                               | 15.7                                                                              | 0.7                                                                               | 3.2                                                                               | 19.3                                                                              | 0.9                                                                               | 1.7                                                                                 | 0.0                                                                                 | 6.7                                                                                 | 6.5                                                                                 | 2.3                                                                                 | 0.9                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 56.1                                                                              | 47.3                                                                              | 19.0                                                                              | 88.1                                                                              | 59.8                                                                              | 8.5                                                                               | 57.6                                                                                | 0.0                                                                                 | 35.7                                                                                | 100.6                                                                               | 22.4                                                                                | 21.0                                                                                |
| LnGrp LOS                    | E                                                                                 | D                                                                                 | B                                                                                 | F                                                                                 | F                                                                                 | A                                                                                 | E                                                                                   | A                                                                                   | D                                                                                   | F                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 1348                                                                              |                                                                                   |                                                                                   | 1537                                                                              |                                                                                   |                                                                                   | 373                                                                                 |                                                                                     |                                                                                     | 371                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 46.5                                                                              |                                                                                   |                                                                                   | 59.0                                                                              |                                                                                   |                                                                                   | 39.3                                                                                |                                                                                     |                                                                                     | 57.6                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | D                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | D                                                                                   |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 13.3                                                                              | 29.9                                                                              | 9.7                                                                               | 37.1                                                                              | 8.5                                                                               | 34.7                                                                              | 8.1                                                                                 | 38.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 8.8                                                                               | 25.4                                                                              | 5.2                                                                               | 32.6                                                                              | 8.8                                                                               | 25.4                                                                              | 5.0                                                                                 | 32.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 10.5                                                                              | 16.9                                                                              | 6.4                                                                               | 33.3                                                                              | 5.1                                                                               | 7.1                                                                               | 4.5                                                                                 | 36.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 1.2                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.9                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 52.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 7: 11th Avenue & Lacey Boulevard

11/02/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 391                                                                               | 414                                                                               | 329                                                                               | 170                                                                               | 470                                                                               | 131                                                                               | 473                                                                                | 977                                                                                 | 88                                                                                  | 142                                                                                 | 853                                                                                 | 162                                                                                 |
| Future Volume (veh/h)        | 391                                                                               | 414                                                                               | 329                                                                               | 170                                                                               | 470                                                                               | 131                                                                               | 473                                                                                | 977                                                                                 | 88                                                                                  | 142                                                                                 | 853                                                                                 | 162                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                 |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                               | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 425                                                                               | 450                                                                               | 358                                                                               | 185                                                                               | 511                                                                               | 142                                                                               | 514                                                                                | 1062                                                                                | 96                                                                                  | 154                                                                                 | 927                                                                                 | 176                                                                                 |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                  | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 466                                                                               | 838                                                                               | 374                                                                               | 218                                                                               | 614                                                                               | 170                                                                               | 569                                                                                | 1159                                                                                | 105                                                                                 | 183                                                                                 | 1029                                                                                | 459                                                                                 |
| Arrive On Green              | 0.14                                                                              | 0.24                                                                              | 0.24                                                                              | 0.12                                                                              | 0.22                                                                              | 0.22                                                                              | 0.17                                                                               | 0.35                                                                                | 0.35                                                                                | 0.10                                                                                | 0.29                                                                                | 0.29                                                                                |
| Sat Flow, veh/h              | 3428                                                                              | 3526                                                                              | 1572                                                                              | 1767                                                                              | 2728                                                                              | 754                                                                               | 3428                                                                               | 3270                                                                                | 295                                                                                 | 1767                                                                                | 3526                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 425                                                                               | 450                                                                               | 358                                                                               | 185                                                                               | 329                                                                               | 324                                                                               | 514                                                                                | 572                                                                                 | 586                                                                                 | 154                                                                                 | 927                                                                                 | 176                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1714                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 1720                                                                              | 1714                                                                               | 1763                                                                                | 1802                                                                                | 1767                                                                                | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 12.1                                                                              | 11.1                                                                              | 14.8                                                                              | 10.2                                                                              | 17.7                                                                              | 17.9                                                                              | 14.6                                                                               | 30.8                                                                                | 30.9                                                                                | 8.5                                                                                 | 25.1                                                                                | 8.9                                                                                 |
| Cycle Q Clear(g_c), s        | 12.1                                                                              | 11.1                                                                              | 14.8                                                                              | 10.2                                                                              | 17.7                                                                              | 17.9                                                                              | 14.6                                                                               | 30.8                                                                                | 30.9                                                                                | 8.5                                                                                 | 25.1                                                                                | 8.9                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.44                                                                              | 1.00                                                                               |                                                                                     | 0.16                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 466                                                                               | 838                                                                               | 374                                                                               | 218                                                                               | 396                                                                               | 387                                                                               | 569                                                                                | 625                                                                                 | 639                                                                                 | 183                                                                                 | 1029                                                                                | 459                                                                                 |
| V/C Ratio(X)                 | 0.91                                                                              | 0.54                                                                              | 0.96                                                                              | 0.85                                                                              | 0.83                                                                              | 0.84                                                                              | 0.90                                                                               | 0.92                                                                                | 0.92                                                                                | 0.84                                                                                | 0.90                                                                                | 0.38                                                                                |
| Avail Cap(c_a), veh/h        | 466                                                                               | 948                                                                               | 423                                                                               | 263                                                                               | 497                                                                               | 485                                                                               | 569                                                                                | 625                                                                                 | 639                                                                                 | 183                                                                                 | 1029                                                                                | 459                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 42.3                                                                              | 33.1                                                                              | 16.4                                                                              | 42.7                                                                              | 36.7                                                                              | 36.8                                                                              | 40.6                                                                               | 30.7                                                                                | 30.7                                                                                | 43.7                                                                                | 33.8                                                                                | 28.0                                                                                |
| Incr Delay (d2), s/veh       | 22.2                                                                              | 0.5                                                                               | 31.4                                                                              | 19.5                                                                              | 9.3                                                                               | 10.1                                                                              | 17.7                                                                               | 20.4                                                                                | 20.2                                                                                | 27.9                                                                                | 12.4                                                                                | 2.4                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 6.5                                                                               | 4.7                                                                               | 8.3                                                                               | 5.5                                                                               | 8.4                                                                               | 8.4                                                                               | 7.4                                                                                | 16.0                                                                                | 16.4                                                                                | 5.1                                                                                 | 12.1                                                                                | 3.6                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 64.5                                                                              | 33.6                                                                              | 47.8                                                                              | 62.1                                                                              | 46.0                                                                              | 46.8                                                                              | 58.3                                                                               | 51.1                                                                                | 50.9                                                                                | 71.6                                                                                | 46.2                                                                                | 30.5                                                                                |
| LnGrp LOS                    | E                                                                                 | C                                                                                 | D                                                                                 | E                                                                                 | D                                                                                 | D                                                                                 | E                                                                                  | D                                                                                   | D                                                                                   | E                                                                                   | D                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 1233                                                                              |                                                                                   |                                                                                   | 838                                                                               |                                                                                   |                                                                                   | 1672                                                                               |                                                                                     |                                                                                     | 1257                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 48.4                                                                              |                                                                                   |                                                                                   | 49.9                                                                              |                                                                                   |                                                                                   | 53.2                                                                               |                                                                                     |                                                                                     | 47.1                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                  |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 14.8                                                                              | 39.7                                                                              | 16.7                                                                              | 28.1                                                                              | 21.0                                                                              | 33.5                                                                              | 18.0                                                                               | 26.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 10.3                                                                              | 35.2                                                                              | 14.8                                                                              | 26.7                                                                              | 16.5                                                                              | 29.0                                                                              | 13.5                                                                               | 28.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 10.5                                                                              | 32.9                                                                              | 12.2                                                                              | 16.8                                                                              | 16.6                                                                              | 27.1                                                                              | 14.1                                                                               | 19.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 1.5                                                                               | 0.1                                                                               | 3.0                                                                               | 0.0                                                                               | 1.2                                                                               | 0.0                                                                                | 2.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 49.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 8: 11th Avenue & 7th Street

11/02/2020

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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 104                                                                               | 272                                                                               | 339                                                                               | 252                                                                               | 250                                                                               | 169                                                                               | 258                                                                                 | 901                                                                                 | 178                                                                                 | 172                                                                                 | 853                                                                                 | 80                                                                                  |
| Future Volume (veh/h)        | 104                                                                               | 272                                                                               | 339                                                                               | 252                                                                               | 250                                                                               | 169                                                                               | 258                                                                                 | 901                                                                                 | 178                                                                                 | 172                                                                                 | 853                                                                                 | 80                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 113                                                                               | 296                                                                               | 368                                                                               | 274                                                                               | 272                                                                               | 184                                                                               | 280                                                                                 | 979                                                                                 | 193                                                                                 | 187                                                                                 | 927                                                                                 | 87                                                                                  |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 169                                                                               | 417                                                                               | 372                                                                               | 281                                                                               | 706                                                                               | 463                                                                               | 284                                                                                 | 1147                                                                                | 512                                                                                 | 204                                                                                 | 987                                                                                 | 440                                                                                 |
| Arrive On Green              | 0.05                                                                              | 0.24                                                                              | 0.24                                                                              | 0.16                                                                              | 0.35                                                                              | 0.35                                                                              | 0.16                                                                                | 0.33                                                                                | 0.33                                                                                | 0.12                                                                                | 0.28                                                                                | 0.28                                                                                |
| Sat Flow, veh/h              | 3428                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                              | 2041                                                                              | 1337                                                                              | 1767                                                                                | 3526                                                                                | 1572                                                                                | 1767                                                                                | 3526                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 113                                                                               | 296                                                                               | 368                                                                               | 274                                                                               | 234                                                                               | 222                                                                               | 280                                                                                 | 979                                                                                 | 193                                                                                 | 187                                                                                 | 927                                                                                 | 87                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1714                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 1615                                                                              | 1767                                                                                | 1763                                                                                | 1572                                                                                | 1767                                                                                | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 3.6                                                                               | 17.0                                                                              | 25.7                                                                              | 17.0                                                                              | 11.0                                                                              | 11.5                                                                              | 17.4                                                                                | 28.5                                                                                | 6.7                                                                                 | 11.5                                                                                | 28.3                                                                                | 4.6                                                                                 |
| Cycle Q Clear(g_c), s        | 3.6                                                                               | 17.0                                                                              | 25.7                                                                              | 17.0                                                                              | 11.0                                                                              | 11.5                                                                              | 17.4                                                                                | 28.5                                                                                | 6.7                                                                                 | 11.5                                                                                | 28.3                                                                                | 4.6                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.83                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 169                                                                               | 417                                                                               | 372                                                                               | 281                                                                               | 610                                                                               | 559                                                                               | 284                                                                                 | 1147                                                                                | 512                                                                                 | 204                                                                                 | 987                                                                                 | 440                                                                                 |
| V/C Ratio(X)                 | 0.67                                                                              | 0.71                                                                              | 0.99                                                                              | 0.97                                                                              | 0.38                                                                              | 0.40                                                                              | 0.98                                                                                | 0.85                                                                                | 0.38                                                                                | 0.92                                                                                | 0.94                                                                                | 0.20                                                                                |
| Avail Cap(c_a), veh/h        | 234                                                                               | 417                                                                               | 372                                                                               | 281                                                                               | 610                                                                               | 559                                                                               | 284                                                                                 | 1147                                                                                | 512                                                                                 | 204                                                                                 | 987                                                                                 | 440                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 51.4                                                                              | 38.5                                                                              | 41.9                                                                              | 46.0                                                                              | 27.1                                                                              | 27.3                                                                              | 46.0                                                                                | 34.6                                                                                | 11.8                                                                                | 48.1                                                                                | 38.7                                                                                | 30.2                                                                                |
| Incr Delay (d2), s/veh       | 4.5                                                                               | 5.6                                                                               | 43.9                                                                              | 46.5                                                                              | 0.4                                                                               | 0.5                                                                               | 49.0                                                                                | 8.1                                                                                 | 2.1                                                                                 | 40.5                                                                                | 17.3                                                                                | 1.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.6                                                                               | 7.8                                                                               | 14.2                                                                              | 11.1                                                                              | 4.7                                                                               | 4.5                                                                               | 11.4                                                                                | 13.2                                                                                | 2.6                                                                                 | 7.3                                                                                 | 14.2                                                                                | 1.9                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 55.9                                                                              | 44.1                                                                              | 85.8                                                                              | 92.5                                                                              | 27.5                                                                              | 27.7                                                                              | 95.0                                                                                | 42.8                                                                                | 13.9                                                                                | 88.6                                                                                | 55.9                                                                                | 31.2                                                                                |
| LnGrp LOS                    | E                                                                                 | D                                                                                 | F                                                                                 | F                                                                                 | C                                                                                 | C                                                                                 | F                                                                                   | D                                                                                   | B                                                                                   | F                                                                                   | E                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 777                                                                               |                                                                                   |                                                                                   | 730                                                                               |                                                                                   |                                                                                   | 1452                                                                                |                                                                                     |                                                                                     | 1201                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 65.6                                                                              |                                                                                   |                                                                                   | 52.0                                                                              |                                                                                   |                                                                                   | 49.0                                                                                |                                                                                     |                                                                                     | 59.2                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | E                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                   |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 17.2                                                                              | 40.3                                                                              | 22.0                                                                              | 30.5                                                                              | 22.2                                                                              | 35.3                                                                              | 9.9                                                                                 | 42.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 12.7                                                                              | 35.8                                                                              | 17.5                                                                              | 26.0                                                                              | 17.7                                                                              | 30.8                                                                              | 7.5                                                                                 | 36.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 13.5                                                                              | 30.5                                                                              | 19.0                                                                              | 27.7                                                                              | 19.4                                                                              | 30.3                                                                              | 5.6                                                                                 | 13.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 3.1                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.4                                                                               | 0.1                                                                                 | 3.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 55.6                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | E                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary 10: 11th Avenue & 5th Street

11/02/2020

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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |                                                                                   |  |                                                                                   |  |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)       | 213                                                                               | 0                                                                                 | 66                                                                                | 15                                                                                | 0                                                                                 | 15                                                                                | 249                                                                                 | 1656                                                                                | 5                                                                                   | 12                                                                                  | 1566                                                                                | 189                                                                                 |
| Future Volume (veh/h)        | 213                                                                               | 0                                                                                 | 66                                                                                | 15                                                                                | 0                                                                                 | 15                                                                                | 249                                                                                 | 1656                                                                                | 5                                                                                   | 12                                                                                  | 1566                                                                                | 189                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 220                                                                               | 0                                                                                 | 68                                                                                | 15                                                                                | 0                                                                                 | 15                                                                                | 257                                                                                 | 1707                                                                                | 5                                                                                   | 12                                                                                  | 1614                                                                                | 195                                                                                 |
| Peak Hour Factor             | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 337                                                                               | 0                                                                                 | 274                                                                               | 159                                                                               | 19                                                                                | 117                                                                               | 291                                                                                 | 2380                                                                                | 7                                                                                   | 25                                                                                  | 1798                                                                                | 802                                                                                 |
| Arrive On Green              | 0.17                                                                              | 0.00                                                                              | 0.17                                                                              | 0.17                                                                              | 0.00                                                                              | 0.17                                                                              | 0.16                                                                                | 0.66                                                                                | 0.66                                                                                | 0.01                                                                                | 0.51                                                                                | 0.51                                                                                |
| Sat Flow, veh/h              | 1387                                                                              | 0                                                                                 | 1572                                                                              | 565                                                                               | 109                                                                               | 673                                                                               | 1767                                                                                | 3606                                                                                | 11                                                                                  | 1767                                                                                | 3526                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 220                                                                               | 0                                                                                 | 68                                                                                | 30                                                                                | 0                                                                                 | 0                                                                                 | 257                                                                                 | 834                                                                                 | 878                                                                                 | 12                                                                                  | 1614                                                                                | 195                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1387                                                                              | 0                                                                                 | 1572                                                                              | 1347                                                                              | 0                                                                                 | 0                                                                                 | 1767                                                                                | 1763                                                                                | 1854                                                                                | 1767                                                                                | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 9.5                                                                               | 0.0                                                                               | 3.3                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 12.7                                                                                | 27.3                                                                                | 27.3                                                                                | 0.6                                                                                 | 37.0                                                                                | 6.2                                                                                 |
| Cycle Q Clear(g_c), s        | 12.8                                                                              | 0.0                                                                               | 3.3                                                                               | 3.4                                                                               | 0.0                                                                               | 0.0                                                                               | 12.7                                                                                | 27.3                                                                                | 27.3                                                                                | 0.6                                                                                 | 37.0                                                                                | 6.2                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 0.50                                                                              |                                                                                   | 0.50                                                                              | 1.00                                                                                |                                                                                     | 0.01                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 337                                                                               | 0                                                                                 | 274                                                                               | 295                                                                               | 0                                                                                 | 0                                                                                 | 291                                                                                 | 1164                                                                                | 1224                                                                                | 25                                                                                  | 1798                                                                                | 802                                                                                 |
| V/C Ratio(X)                 | 0.65                                                                              | 0.00                                                                              | 0.25                                                                              | 0.10                                                                              | 0.00                                                                              | 0.00                                                                              | 0.88                                                                                | 0.72                                                                                | 0.72                                                                                | 0.47                                                                                | 0.90                                                                                | 0.24                                                                                |
| Avail Cap(c_a), veh/h        | 498                                                                               | 0                                                                                 | 457                                                                               | 463                                                                               | 0                                                                                 | 0                                                                                 | 295                                                                                 | 1164                                                                                | 1224                                                                                | 99                                                                                  | 1798                                                                                | 802                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 35.4                                                                              | 0.0                                                                               | 31.8                                                                              | 31.0                                                                              | 0.0                                                                               | 0.0                                                                               | 36.5                                                                                | 9.8                                                                                 | 9.8                                                                                 | 43.7                                                                                | 19.8                                                                                | 12.2                                                                                |
| Incr Delay (d2), s/veh       | 2.1                                                                               | 0.0                                                                               | 0.5                                                                               | 0.1                                                                               | 0.0                                                                               | 0.0                                                                               | 25.4                                                                                | 3.8                                                                                 | 3.6                                                                                 | 12.9                                                                                | 7.5                                                                                 | 0.7                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 4.7                                                                               | 0.0                                                                               | 1.3                                                                               | 0.6                                                                               | 0.0                                                                               | 0.0                                                                               | 7.4                                                                                 | 10.0                                                                                | 10.5                                                                                | 0.4                                                                                 | 15.7                                                                                | 2.2                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 37.6                                                                              | 0.0                                                                               | 32.3                                                                              | 31.2                                                                              | 0.0                                                                               | 0.0                                                                               | 61.9                                                                                | 13.6                                                                                | 13.4                                                                                | 56.6                                                                                | 27.3                                                                                | 13.0                                                                                |
| LnGrp LOS                    | D                                                                                 | A                                                                                 | C                                                                                 | C                                                                                 | A                                                                                 | A                                                                                 | E                                                                                   | B                                                                                   | B                                                                                   | E                                                                                   | C                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 288                                                                               |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 1969                                                                                |                                                                                     |                                                                                     | 1821                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 36.3                                                                              |                                                                                   |                                                                                   | 31.2                                                                              |                                                                                   |                                                                                   | 19.8                                                                                |                                                                                     |                                                                                     | 26.0                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | D                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 4                                                                                 |                                                                                   | 5                                                                                 | 6                                                                                 | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 5.8                                                                               | 63.5                                                                              | 20.1                                                                              |                                                                                   | 19.2                                                                              | 50.1                                                                              | 20.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 5.0                                                                               | 55.5                                                                              | 26.0                                                                              |                                                                                   | 14.9                                                                              | 45.6                                                                              | 26.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 2.6                                                                               | 29.3                                                                              | 14.8                                                                              |                                                                                   | 14.7                                                                              | 39.0                                                                              | 5.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 15.5                                                                              | 0.8                                                                               |                                                                                   | 0.0                                                                               | 5.4                                                                               | 0.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 23.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 11: 11th Avenue & SR 198 WB On Ramp/4th Street

11/02/2020

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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |                                                                                   |                                                                                   |  |  |  |  |  |                                                                                     |                                                                                     |  |  |
| Traffic Volume (veh/h)       | 0                                                                                 | 0                                                                                 | 0                                                                                 | 337                                                                               | 54                                                                                | 303                                                                               | 141                                                                                 | 1595                                                                                | 0                                                                                   | 0                                                                                   | 1351                                                                                | 428                                                                                 |
| Future Volume (veh/h)        | 0                                                                                 | 0                                                                                 | 0                                                                                 | 337                                                                               | 54                                                                                | 303                                                                               | 141                                                                                 | 1595                                                                                | 0                                                                                   | 0                                                                                   | 1351                                                                                | 428                                                                                 |
| Initial Q (Qb), veh          |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       |                                                                                   |                                                                                   |                                                                                   | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 0                                                                                   | 0                                                                                   | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         |                                                                                   |                                                                                   |                                                                                   | 355                                                                               | 57                                                                                | 319                                                                               | 148                                                                                 | 1679                                                                                | 0                                                                                   | 0                                                                                   | 1422                                                                                | 451                                                                                 |
| Peak Hour Factor             |                                                                                   |                                                                                   |                                                                                   | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         |                                                                                   |                                                                                   |                                                                                   | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 0                                                                                   | 0                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   |                                                                                   |                                                                                   |                                                                                   | 431                                                                               | 453                                                                               | 384                                                                               | 182                                                                                 | 2265                                                                                | 0                                                                                   | 0                                                                                   | 1702                                                                                | 759                                                                                 |
| Arrive On Green              |                                                                                   |                                                                                   |                                                                                   | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.10                                                                                | 0.64                                                                                | 0.00                                                                                | 0.00                                                                                | 0.48                                                                                | 0.48                                                                                |
| Sat Flow, veh/h              |                                                                                   |                                                                                   |                                                                                   | 1767                                                                              | 1856                                                                              | 1572                                                                              | 1767                                                                                | 3618                                                                                | 0                                                                                   | 0                                                                                   | 3618                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         |                                                                                   |                                                                                   |                                                                                   | 355                                                                               | 57                                                                                | 319                                                                               | 148                                                                                 | 1679                                                                                | 0                                                                                   | 0                                                                                   | 1422                                                                                | 451                                                                                 |
| Grp Sat Flow(s),veh/h/ln     |                                                                                   |                                                                                   |                                                                                   | 1767                                                                              | 1856                                                                              | 1572                                                                              | 1767                                                                                | 1763                                                                                | 0                                                                                   | 0                                                                                   | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              |                                                                                   |                                                                                   |                                                                                   | 15.1                                                                              | 1.9                                                                               | 15.3                                                                              | 6.5                                                                                 | 25.8                                                                                | 0.0                                                                                 | 0.0                                                                                 | 27.7                                                                                | 16.5                                                                                |
| Cycle Q Clear(g_c), s        |                                                                                   |                                                                                   |                                                                                   | 15.1                                                                              | 1.9                                                                               | 15.3                                                                              | 6.5                                                                                 | 25.8                                                                                | 0.0                                                                                 | 0.0                                                                                 | 27.7                                                                                | 16.5                                                                                |
| Prop In Lane                 |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 0.00                                                                                | 0.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       |                                                                                   |                                                                                   |                                                                                   | 431                                                                               | 453                                                                               | 384                                                                               | 182                                                                                 | 2265                                                                                | 0                                                                                   | 0                                                                                   | 1702                                                                                | 759                                                                                 |
| V/C Ratio(X)                 |                                                                                   |                                                                                   |                                                                                   | 0.82                                                                              | 0.13                                                                              | 0.83                                                                              | 0.81                                                                                | 0.74                                                                                | 0.00                                                                                | 0.00                                                                                | 0.84                                                                                | 0.59                                                                                |
| Avail Cap(c_a), veh/h        |                                                                                   |                                                                                   |                                                                                   | 668                                                                               | 701                                                                               | 594                                                                               | 191                                                                                 | 2265                                                                                | 0                                                                                   | 0                                                                                   | 1702                                                                                | 759                                                                                 |
| HCM Platoon Ratio            |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     |                                                                                   |                                                                                   |                                                                                   | 28.4                                                                              | 23.4                                                                              | 28.5                                                                              | 34.8                                                                                | 9.7                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 17.8                                                                                | 14.9                                                                                |
| Incr Delay (d2), s/veh       |                                                                                   |                                                                                   |                                                                                   | 4.9                                                                               | 0.1                                                                               | 5.9                                                                               | 21.9                                                                                | 2.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 5.0                                                                                 | 3.4                                                                                 |
| Initial Q Delay(d3),s/veh    |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     |                                                                                   |                                                                                   |                                                                                   | 6.4                                                                               | 0.8                                                                               | 5.9                                                                               | 3.8                                                                                 | 8.7                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 11.1                                                                                | 6.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         |                                                                                   |                                                                                   |                                                                                   | 33.2                                                                              | 23.5                                                                              | 34.3                                                                              | 56.7                                                                                | 11.9                                                                                | 0.0                                                                                 | 0.0                                                                                 | 22.8                                                                                | 18.3                                                                                |
| LnGrp LOS                    |                                                                                   |                                                                                   |                                                                                   | C                                                                                 | C                                                                                 | C                                                                                 | E                                                                                   | B                                                                                   | A                                                                                   | A                                                                                   | C                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 731                                                                               |                                                                                   |                                                                                     | 1827                                                                                |                                                                                     |                                                                                     | 1873                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 33.0                                                                              |                                                                                   |                                                                                     | 15.5                                                                                |                                                                                     |                                                                                     | 21.7                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer - Assigned Phs         |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 5                                                                                 | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 55.5                                                                              |                                                                                   |                                                                                   | 12.7                                                                              | 42.8                                                                              |                                                                                     | 23.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                   | 4.5                                                                               | 4.5                                                                               |                                                                                     | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 51.0                                                                              |                                                                                   |                                                                                   | 8.6                                                                               | 37.9                                                                              |                                                                                     | 30.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 27.8                                                                              |                                                                                   |                                                                                   | 8.5                                                                               | 29.7                                                                              |                                                                                     | 17.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 14.6                                                                              |                                                                                   |                                                                                   | 0.0                                                                               | 6.2                                                                               |                                                                                     | 2.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   |                                                                                   | 21.0                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# HCM 6th Signalized Intersection Summary 12: 11th Avenue & SR 198 EB Off Ramp/3rd Street

11/02/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |                                                                                   |                                                                                   |                                                                                   |                                                                                    |  |  |  |  |  |
| Traffic Volume (veh/h)       | 570                                                                               | 122                                                                               | 116                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 1167                                                                                | 314                                                                                 | 436                                                                                 | 1260                                                                                | 0                                                                                   |
| Future Volume (veh/h)        | 570                                                                               | 122                                                                               | 116                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 1167                                                                                | 314                                                                                 | 436                                                                                 | 1260                                                                                | 0                                                                                   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                 |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 0                                                                                   |
| Adj Flow Rate, veh/h         | 594                                                                               | 127                                                                               | 121                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1216                                                                                | 327                                                                                 | 454                                                                                 | 1312                                                                                | 0                                                                                   |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.96                                                                               | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 0                                                                                   |
| Cap, veh/h                   | 514                                                                               | 110                                                                               | 550                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1106                                                                                | 493                                                                                 | 378                                                                                 | 2003                                                                                | 0                                                                                   |
| Arrive On Green              | 0.35                                                                              | 0.35                                                                              | 0.35                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.31                                                                                | 0.31                                                                                | 0.21                                                                                | 0.57                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 1468                                                                              | 314                                                                               | 1572                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 3618                                                                                | 1572                                                                                | 1767                                                                                | 3618                                                                                | 0                                                                                   |
| Grp Volume(v), veh/h         | 721                                                                               | 0                                                                                 | 121                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1216                                                                                | 327                                                                                 | 454                                                                                 | 1312                                                                                | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1782                                                                              | 0                                                                                 | 1572                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1763                                                                                | 1572                                                                                | 1767                                                                                | 1763                                                                                | 0                                                                                   |
| Q Serve(g_s), s              | 38.5                                                                              | 0.0                                                                               | 6.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 34.5                                                                                | 19.8                                                                                | 23.5                                                                                | 28.2                                                                                | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 38.5                                                                              | 0.0                                                                               | 6.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 34.5                                                                                | 19.8                                                                                | 23.5                                                                                | 28.2                                                                                | 0.0                                                                                 |
| Prop In Lane                 | 0.82                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.00                                                                                |
| Lane Grp Cap(c), veh/h       | 624                                                                               | 0                                                                                 | 550                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1106                                                                                | 493                                                                                 | 378                                                                                 | 2003                                                                                | 0                                                                                   |
| V/C Ratio(X)                 | 1.16                                                                              | 0.00                                                                              | 0.22                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 1.10                                                                                | 0.66                                                                                | 1.20                                                                                | 0.65                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 624                                                                               | 0                                                                                 | 550                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1106                                                                                | 493                                                                                 | 378                                                                                 | 2003                                                                                | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 35.8                                                                              | 0.0                                                                               | 25.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 37.8                                                                                | 32.7                                                                                | 43.3                                                                                | 16.3                                                                                | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 87.3                                                                              | 0.0                                                                               | 0.2                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 58.6                                                                                | 6.9                                                                                 | 113.8                                                                               | 1.7                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 30.8                                                                              | 0.0                                                                               | 2.2                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 23.2                                                                                | 8.2                                                                                 | 22.1                                                                                | 11.2                                                                                | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 123.1                                                                             | 0.0                                                                               | 25.4                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 96.4                                                                                | 39.6                                                                                | 157.1                                                                               | 18.0                                                                                | 0.0                                                                                 |
| LnGrp LOS                    | F                                                                                 | A                                                                                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | A                                                                                  | F                                                                                   | D                                                                                   | F                                                                                   | B                                                                                   | A                                                                                   |
| Approach Vol, veh/h          | 842                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 1543                                                                               |                                                                                     |                                                                                     | 1766                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 109.1                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 84.3                                                                               |                                                                                     |                                                                                     | 53.8                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | F                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | F                                                                                  |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 28.0                                                                              | 39.0                                                                              |                                                                                   | 43.0                                                                              |                                                                                   |                                                                                   | 67.0                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                   | 4.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 23.5                                                                              | 34.5                                                                              |                                                                                   | 38.5                                                                              |                                                                                   |                                                                                   | 62.5                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 25.5                                                                              | 36.5                                                                              |                                                                                   | 40.5                                                                              |                                                                                   |                                                                                   | 30.2                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 12.7                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 76.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | E                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

HCM 6th AWSC  
5: Campus Dr/Campus Drive & 7th Street

11/02/2020

| Intersection              |      |
|---------------------------|------|
| Intersection Delay, s/veh | 92.9 |
| Intersection LOS          | F    |

| Movement            | EBL                                                                               | EBT                                                                               | EBR  | WBL                                                                               | WBT                                                                               | WBR  | NBL  | NBT                                                                                 | NBR  | SBL  | SBT                                                                                 | SBR  |
|---------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|
| Lane Configurations |  |  |      |  |  |      |      |  |      |      |  |      |
| Traffic Vol, veh/h  | 108                                                                               | 410                                                                               | 40   | 14                                                                                | 521                                                                               | 62   | 59   | 73                                                                                  | 6    | 136  | 45                                                                                  | 135  |
| Future Vol, veh/h   | 108                                                                               | 410                                                                               | 40   | 14                                                                                | 521                                                                               | 62   | 59   | 73                                                                                  | 6    | 136  | 45                                                                                  | 135  |
| Peak Hour Factor    | 0.96                                                                              | 0.96                                                                              | 0.96 | 0.96                                                                              | 0.96                                                                              | 0.96 | 0.96 | 0.96                                                                                | 0.96 | 0.96 | 0.96                                                                                | 0.96 |
| Heavy Vehicles, %   | 3                                                                                 | 3                                                                                 | 3    | 3                                                                                 | 3                                                                                 | 3    | 3    | 3                                                                                   | 3    | 3    | 3                                                                                   | 3    |
| Mvmt Flow           | 113                                                                               | 427                                                                               | 42   | 15                                                                                | 543                                                                               | 65   | 61   | 76                                                                                  | 6    | 142  | 47                                                                                  | 141  |
| Number of Lanes     | 1                                                                                 | 1                                                                                 | 0    | 1                                                                                 | 1                                                                                 | 0    | 0    | 1                                                                                   | 0    | 0    | 1                                                                                   | 0    |

| Approach                   | EB   | WB    | NB   | SB   |
|----------------------------|------|-------|------|------|
| Opposing Approach          | WB   | EB    | SB   | NB   |
| Opposing Lanes             | 2    | 2     | 1    | 1    |
| Conflicting Approach Left  | SB   | NB    | EB   | WB   |
| Conflicting Lanes Left     | 1    | 1     | 2    | 2    |
| Conflicting Approach Right | NB   | SB    | WB   | EB   |
| Conflicting Lanes Right    | 1    | 1     | 2    | 2    |
| HCM Control Delay          | 58.9 | 175.5 | 18.1 | 29.5 |
| HCM LOS                    | F    | F     | C    | D    |

| Lane                   | NBLn1 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | SBLn1 |
|------------------------|-------|-------|-------|-------|-------|-------|
| Vol Left, %            | 43%   | 100%  | 0%    | 100%  | 0%    | 43%   |
| Vol Thru, %            | 53%   | 0%    | 91%   | 0%    | 89%   | 14%   |
| Vol Right, %           | 4%    | 0%    | 9%    | 0%    | 11%   | 43%   |
| Sign Control           | Stop  | Stop  | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 138   | 108   | 450   | 14    | 583   | 316   |
| LT Vol                 | 59    | 108   | 0     | 14    | 0     | 136   |
| Through Vol            | 73    | 0     | 410   | 0     | 521   | 45    |
| RT Vol                 | 6     | 0     | 40    | 0     | 62    | 135   |
| Lane Flow Rate         | 144   | 112   | 469   | 15    | 607   | 329   |
| Geometry Grp           | 2     | 7     | 7     | 7     | 7     | 2     |
| Degree of Util (X)     | 0.354 | 0.256 | 0.991 | 0.034 | 1.314 | 0.708 |
| Departure Headway (Hd) | 9.816 | 8.804 | 8.219 | 8.387 | 7.792 | 8.475 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 369   | 411   | 445   | 426   | 468   | 431   |
| Service Time           | 7.816 | 6.504 | 5.919 | 6.148 | 5.553 | 6.475 |
| HCM Lane V/C Ratio     | 0.39  | 0.273 | 1.054 | 0.035 | 1.297 | 0.763 |
| HCM Control Delay      | 18.1  | 14.5  | 69.5  | 11.4  | 179.4 | 29.5  |
| HCM Lane LOS           | C     | B     | F     | B     | F     | D     |
| HCM 95th-tile Q        | 1.6   | 1     | 12.5  | 0.1   | 26.5  | 5.4   |

HCM 6th TWSC  
1: 12th Avenue & Glendale Avenue

11/02/2020

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 6.4  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      |      | ↗    |      |      | ↗    |      | ↑↑↑  |      | ↗↑↑↑ |      |      |
| Traffic Vol, veh/h       | 0    | 0    | 111  | 0    | 0    | 118  | 0    | 1829 | 191  | 85   | 1182 | 155  |
| Future Vol, veh/h        | 0    | 0    | 111  | 0    | 0    | 118  | 0    | 1829 | 191  | 85   | 1182 | 155  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | 0    | -    | -    | 0    | -    | -    | -    | 125  | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    |
| Mvmt Flow                | 0    | 0    | 121  | 0    | 0    | 128  | 0    | 1988 | 208  | 92   | 1285 | 168  |

| Major/Minor          | Minor2 |   | Minor1 |   | Major1 |      | Major2 |      |
|----------------------|--------|---|--------|---|--------|------|--------|------|
| Conflicting Flow All | -      | - | 727    | - | -      | 1098 | -      | 0    |
| Stage 1              | -      | - | -      | - | -      | -    | -      | -    |
| Stage 2              | -      | - | -      | - | -      | -    | -      | -    |
| Critical Hdwy        | -      | - | 7.16   | - | -      | 7.16 | -      | 5.36 |
| Critical Hdwy Stg 1  | -      | - | -      | - | -      | -    | -      | -    |
| Critical Hdwy Stg 2  | -      | - | -      | - | -      | -    | -      | -    |
| Follow-up Hdwy       | -      | - | 3.93   | - | -      | 3.93 | -      | 3.13 |
| Pot Cap-1 Maneuver   | 0      | 0 | 313    | 0 | 0      | 177  | 0      | 98   |
| Stage 1              | 0      | 0 | -      | 0 | 0      | -    | -      | -    |
| Stage 2              | 0      | 0 | -      | 0 | 0      | -    | -      | -    |
| Platoon blocked, %   | -      | - | -      | - | -      | -    | -      | -    |
| Mov Cap-1 Maneuver   | -      | - | 313    | - | -      | 177  | -      | 98   |
| Mov Cap-2 Maneuver   | -      | - | -      | - | -      | -    | -      | -    |
| Stage 1              | -      | - | -      | - | -      | -    | -      | -    |
| Stage 2              | -      | - | -      | - | -      | -    | -      | -    |

| Approach             | EB   | WB   | NB | SB  |
|----------------------|------|------|----|-----|
| HCM Control Delay, s | 23.5 | 65.7 | 0  | 9.2 |
| HCM LOS              | C    | F    |    |     |

| Minor Lane/Major Mvmt | NBT | NBR | EBLn1WBLn1 | SBL   | SBT   | SBR |
|-----------------------|-----|-----|------------|-------|-------|-----|
| Capacity (veh/h)      | -   | -   | 313        | 177   | 98    | -   |
| HCM Lane V/C Ratio    | -   | -   | 0.385      | 0.725 | 0.943 | -   |
| HCM Control Delay (s) | -   | -   | 23.5       | 65.7  | 154.4 | -   |
| HCM Lane LOS          | -   | -   | C          | F     | F     | -   |
| HCM 95th %tile Q(veh) | -   | -   | 1.8        | 4.5   | 5.5   | -   |

HCM 6th TWSC  
6: Campus Dr & 6th Street

11/02/2020

| Intersection             |        |                                                                                   |        |            |                                                                                   |       |        |                                                                                   |      |       |                                                                                     |      |
|--------------------------|--------|-----------------------------------------------------------------------------------|--------|------------|-----------------------------------------------------------------------------------|-------|--------|-----------------------------------------------------------------------------------|------|-------|-------------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 4.7    |                                                                                   |        |            |                                                                                   |       |        |                                                                                   |      |       |                                                                                     |      |
| Movement                 | EBL    | EBT                                                                               | EBR    | WBL        | WBT                                                                               | WBR   | NBL    | NBT                                                                               | NBR  | SBL   | SBT                                                                                 | SBR  |
| Lane Configurations      |        |  |        |            |  |       |        |  |      |       |  |      |
| Traffic Vol, veh/h       | 25     | 20                                                                                | 2      | 0          | 15                                                                                | 113   | 2      | 59                                                                                | 2    | 46    | 148                                                                                 | 39   |
| Future Vol, veh/h        | 25     | 20                                                                                | 2      | 0          | 15                                                                                | 113   | 2      | 59                                                                                | 2    | 46    | 148                                                                                 | 39   |
| Conflicting Peds, #/hr   | 0      | 0                                                                                 | 0      | 0          | 0                                                                                 | 0     | 0      | 0                                                                                 | 0    | 0     | 0                                                                                   | 0    |
| Sign Control             | Stop   | Stop                                                                              | Stop   | Stop       | Stop                                                                              | Stop  | Free   | Free                                                                              | Free | Free  | Free                                                                                | Free |
| RT Channelized           | -      | -                                                                                 | None   | -          | -                                                                                 | None  | -      | -                                                                                 | None | -     | -                                                                                   | None |
| Storage Length           | -      | -                                                                                 | -      | -          | -                                                                                 | -     | -      | -                                                                                 | -    | -     | -                                                                                   | -    |
| Veh in Median Storage, # | -      | 0                                                                                 | -      | -          | 0                                                                                 | -     | -      | 0                                                                                 | -    | -     | 0                                                                                   | -    |
| Grade, %                 | -      | 0                                                                                 | -      | -          | 0                                                                                 | -     | -      | 0                                                                                 | -    | -     | 0                                                                                   | -    |
| Peak Hour Factor         | 92     | 92                                                                                | 92     | 92         | 92                                                                                | 92    | 92     | 92                                                                                | 92   | 92    | 92                                                                                  | 92   |
| Heavy Vehicles, %        | 3      | 3                                                                                 | 3      | 3          | 3                                                                                 | 3     | 3      | 3                                                                                 | 3    | 3     | 3                                                                                   | 3    |
| Mvmt Flow                | 27     | 22                                                                                | 2      | 0          | 16                                                                                | 123   | 2      | 64                                                                                | 2    | 50    | 161                                                                                 | 42   |
|                          |        |                                                                                   |        |            |                                                                                   |       |        |                                                                                   |      |       |                                                                                     |      |
| Major/Minor              | Minor2 |                                                                                   | Minor1 |            | Major1                                                                            |       | Major2 |                                                                                   |      |       |                                                                                     |      |
| Conflicting Flow All     | 421    | 352                                                                               | 182    | 363        | 372                                                                               | 65    | 203    | 0                                                                                 | 0    | 66    | 0                                                                                   | 0    |
| Stage 1                  | 282    | 282                                                                               | -      | 69         | 69                                                                                | -     | -      | -                                                                                 | -    | -     | -                                                                                   | -    |
| Stage 2                  | 139    | 70                                                                                | -      | 294        | 303                                                                               | -     | -      | -                                                                                 | -    | -     | -                                                                                   | -    |
| Critical Hdwy            | 7.13   | 6.53                                                                              | 6.23   | 7.13       | 6.53                                                                              | 6.23  | 4.13   | -                                                                                 | -    | 4.13  | -                                                                                   | -    |
| Critical Hdwy Stg 1      | 6.13   | 5.53                                                                              | -      | 6.13       | 5.53                                                                              | -     | -      | -                                                                                 | -    | -     | -                                                                                   | -    |
| Critical Hdwy Stg 2      | 6.13   | 5.53                                                                              | -      | 6.13       | 5.53                                                                              | -     | -      | -                                                                                 | -    | -     | -                                                                                   | -    |
| Follow-up Hdwy           | 3.527  | 4.027                                                                             | 3.327  | 3.527      | 4.027                                                                             | 3.327 | 2.227  | -                                                                                 | -    | 2.227 | -                                                                                   | -    |
| Pot Cap-1 Maneuver       | 541    | 571                                                                               | 858    | 591        | 557                                                                               | 996   | 1363   | -                                                                                 | -    | 1529  | -                                                                                   | -    |
| Stage 1                  | 723    | 676                                                                               | -      | 939        | 835                                                                               | -     | -      | -                                                                                 | -    | -     | -                                                                                   | -    |
| Stage 2                  | 862    | 835                                                                               | -      | 712        | 662                                                                               | -     | -      | -                                                                                 | -    | -     | -                                                                                   | -    |
| Platoon blocked, %       |        |                                                                                   |        |            |                                                                                   |       |        | -                                                                                 | -    |       | -                                                                                   | -    |
| Mov Cap-1 Maneuver       | 450    | 549                                                                               | 858    | 555        | 535                                                                               | 996   | 1363   | -                                                                                 | -    | 1529  | -                                                                                   | -    |
| Mov Cap-2 Maneuver       | 450    | 549                                                                               | -      | 555        | 535                                                                               | -     | -      | -                                                                                 | -    | -     | -                                                                                   | -    |
| Stage 1                  | 722    | 651                                                                               | -      | 937        | 833                                                                               | -     | -      | -                                                                                 | -    | -     | -                                                                                   | -    |
| Stage 2                  | 739    | 833                                                                               | -      | 661        | 638                                                                               | -     | -      | -                                                                                 | -    | -     | -                                                                                   | -    |
|                          |        |                                                                                   |        |            |                                                                                   |       |        |                                                                                   |      |       |                                                                                     |      |
| Approach                 | EB     |                                                                                   | WB     |            | NB                                                                                |       | SB     |                                                                                   |      |       |                                                                                     |      |
| HCM Control Delay, s     | 13.1   |                                                                                   | 9.7    |            | 0.2                                                                               |       | 1.5    |                                                                                   |      |       |                                                                                     |      |
| HCM LOS                  | B      |                                                                                   | A      |            |                                                                                   |       |        |                                                                                   |      |       |                                                                                     |      |
|                          |        |                                                                                   |        |            |                                                                                   |       |        |                                                                                   |      |       |                                                                                     |      |
| Minor Lane/Major Mvmt    | NBL    | NBT                                                                               | NBR    | EBLn1WBLn1 | SBL                                                                               | SBT   | SBR    |                                                                                   |      |       |                                                                                     |      |
| Capacity (veh/h)         | 1363   | -                                                                                 | -      | 498        | 905                                                                               | 1529  | -      | -                                                                                 |      |       |                                                                                     |      |
| HCM Lane V/C Ratio       | 0.002  | -                                                                                 | -      | 0.103      | 0.154                                                                             | 0.033 | -      | -                                                                                 |      |       |                                                                                     |      |
| HCM Control Delay (s)    | 7.6    | 0                                                                                 | -      | 13.1       | 9.7                                                                               | 7.4   | 0      | -                                                                                 |      |       |                                                                                     |      |
| HCM Lane LOS             | A      | A                                                                                 | -      | B          | A                                                                                 | A     | A      | -                                                                                 |      |       |                                                                                     |      |
| HCM 95th %tile Q(veh)    | 0      | -                                                                                 | -      | 0.3        | 0.5                                                                               | 0.1   | -      | -                                                                                 |      |       |                                                                                     |      |

| Intersection             |      |      |                                                                                   |      |      |                                                                                   |                                                                                   |                                                                                   |      |                                                                                     |                                                                                     |      |
|--------------------------|------|------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 2.3  |      |                                                                                   |      |      |                                                                                   |                                                                                   |                                                                                   |      |                                                                                     |                                                                                     |      |
| Movement                 | EBL  | EBT  | EBR                                                                               | WBL  | WBT  | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR  | SBL                                                                                 | SBT                                                                                 | SBR  |
| Lane Configurations      |      |      |  |      |      |  |  |  |      |  |  |      |
| Traffic Vol, veh/h       | 0    | 0    | 80                                                                                | 0    | 0    | 80                                                                                | 153                                                                               | 1194                                                                              | 99   | 114                                                                                 | 817                                                                                 | 22   |
| Future Vol, veh/h        | 0    | 0    | 80                                                                                | 0    | 0    | 80                                                                                | 153                                                                               | 1194                                                                              | 99   | 114                                                                                 | 817                                                                                 | 22   |
| Conflicting Peds, #/hr   | 0    | 0    | 0                                                                                 | 0    | 0    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                   | 0                                                                                   | 0    |
| Sign Control             | Stop | Stop | Stop                                                                              | Stop | Stop | Stop                                                                              | Free                                                                              | Free                                                                              | Free | Free                                                                                | Free                                                                                | Free |
| RT Channelized           | -    | -    | None                                                                              | -    | -    | None                                                                              | -                                                                                 | -                                                                                 | None | -                                                                                   | -                                                                                   | None |
| Storage Length           | -    | -    | 0                                                                                 | -    | -    | 0                                                                                 | 75                                                                                | -                                                                                 | -    | 125                                                                                 | -                                                                                   | -    |
| Veh in Median Storage, # | -    | 0    | -                                                                                 | -    | 0    | -                                                                                 | -                                                                                 | 0                                                                                 | -    | -                                                                                   | 0                                                                                   | -    |
| Grade, %                 | -    | 0    | -                                                                                 | -    | 0    | -                                                                                 | -                                                                                 | 0                                                                                 | -    | -                                                                                   | 0                                                                                   | -    |
| Peak Hour Factor         | 92   | 92   | 92                                                                                | 92   | 92   | 92                                                                                | 92                                                                                | 92                                                                                | 92   | 92                                                                                  | 92                                                                                  | 92   |
| Heavy Vehicles, %        | 3    | 3    | 3                                                                                 | 3    | 3    | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3    | 3                                                                                   | 3                                                                                   | 3    |
| Mvmt Flow                | 0    | 0    | 87                                                                                | 0    | 0    | 87                                                                                | 166                                                                               | 1298                                                                              | 108  | 124                                                                                 | 888                                                                                 | 24   |

| Major/Minor          | Minor2 |   | Minor1 |   | Major1 |      | Major2 |   |
|----------------------|--------|---|--------|---|--------|------|--------|---|
| Conflicting Flow All | -      | - | 456    | - | -      | 703  | 912    | 0 |
| Stage 1              | -      | - | -      | - | -      | -    | -      | - |
| Stage 2              | -      | - | -      | - | -      | -    | -      | - |
| Critical Hdwy        | -      | - | 6.96   | - | -      | 6.96 | 4.16   | - |
| Critical Hdwy Stg 1  | -      | - | -      | - | -      | -    | -      | - |
| Critical Hdwy Stg 2  | -      | - | -      | - | -      | -    | -      | - |
| Follow-up Hdwy       | -      | - | 3.33   | - | -      | 3.33 | 2.23   | - |
| Pot Cap-1 Maneuver   | 0      | 0 | 549    | 0 | 0      | 378  | 737    | - |
| Stage 1              | 0      | 0 | -      | 0 | 0      | -    | -      | - |
| Stage 2              | 0      | 0 | -      | 0 | 0      | -    | -      | - |
| Platoon blocked, %   | -      | - | -      | - | -      | -    | -      | - |
| Mov Cap-1 Maneuver   | -      | - | 549    | - | -      | 378  | 737    | - |
| Mov Cap-2 Maneuver   | -      | - | -      | - | -      | -    | -      | - |
| Stage 1              | -      | - | -      | - | -      | -    | -      | - |
| Stage 2              | -      | - | -      | - | -      | -    | -      | - |

| Approach             | EB   | WB   | NB  | SB  |
|----------------------|------|------|-----|-----|
| HCM Control Delay, s | 12.8 | 17.3 | 1.2 | 1.8 |
| HCM LOS              | B    | C    |     |     |

| Minor Lane/Major Mvmt | NBL   | NBT | NBR | EBLn1WBLn1 | SBL  | SBT  | SBR |
|-----------------------|-------|-----|-----|------------|------|------|-----|
| Capacity (veh/h)      | 737   | -   | -   | 549        | 378  | 476  | -   |
| HCM Lane V/C Ratio    | 0.226 | -   | -   | 0.158      | 0.23 | 0.26 | -   |
| HCM Control Delay (s) | 11.3  | -   | -   | 12.8       | 17.3 | 15.2 | -   |
| HCM Lane LOS          | B     | -   | -   | B          | C    | C    | -   |
| HCM 95th %tile Q(veh) | 0.9   | -   | -   | 0.6        | 0.9  | 1    | -   |

# HCM 6th Signalized Intersection Summary

## 2: SR 198 WB Ramps & 12th Avenue

11/02/2020

|                              |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | WBL                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                                 | SBR                                                                                 | NEL                                                                                 | NER                                                                                 |
| Lane Configurations          |  |  |  |  |                                                                                   |                                                                                   |  |  |                                                                                     |                                                                                     |
| Traffic Volume (veh/h)       | 71                                                                                | 742                                                                               | 79                                                                                | 1284                                                                              | 0                                                                                 | 0                                                                                 | 817                                                                                 | 470                                                                                 | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 71                                                                                | 742                                                                               | 79                                                                                | 1284                                                                              | 0                                                                                 | 0                                                                                 | 817                                                                                 | 470                                                                                 | 0                                                                                   | 0                                                                                   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 0                                                                                 | 0                                                                                 | 1856                                                                                | 1856                                                                                |                                                                                     |                                                                                     |
| Adj Flow Rate, veh/h         | 77                                                                                | 807                                                                               | 86                                                                                | 1396                                                                              | 0                                                                                 | 0                                                                                 | 888                                                                                 | 511                                                                                 |                                                                                     |                                                                                     |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                |                                                                                     |                                                                                     |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 3                                                                                   | 3                                                                                   |                                                                                     |                                                                                     |
| Cap, veh/h                   | 535                                                                               | 951                                                                               | 111                                                                               | 2067                                                                              | 0                                                                                 | 0                                                                                 | 1651                                                                                | 736                                                                                 |                                                                                     |                                                                                     |
| Arrive On Green              | 0.30                                                                              | 0.30                                                                              | 0.06                                                                              | 0.59                                                                              | 0.00                                                                              | 0.00                                                                              | 0.47                                                                                | 0.47                                                                                |                                                                                     |                                                                                     |
| Sat Flow, veh/h              | 1767                                                                              | 3145                                                                              | 1767                                                                              | 3618                                                                              | 0                                                                                 | 0                                                                                 | 3618                                                                                | 1572                                                                                |                                                                                     |                                                                                     |
| Grp Volume(v), veh/h         | 77                                                                                | 807                                                                               | 86                                                                                | 1396                                                                              | 0                                                                                 | 0                                                                                 | 888                                                                                 | 511                                                                                 |                                                                                     |                                                                                     |
| Grp Sat Flow(s),veh/h/ln     | 1767                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 0                                                                                 | 0                                                                                 | 1763                                                                                | 1572                                                                                |                                                                                     |                                                                                     |
| Q Serve(g_s), s              | 2.6                                                                               | 19.5                                                                              | 3.9                                                                               | 22.0                                                                              | 0.0                                                                               | 0.0                                                                               | 14.5                                                                                | 20.7                                                                                |                                                                                     |                                                                                     |
| Cycle Q Clear(g_c), s        | 2.6                                                                               | 19.5                                                                              | 3.9                                                                               | 22.0                                                                              | 0.0                                                                               | 0.0                                                                               | 14.5                                                                                | 20.7                                                                                |                                                                                     |                                                                                     |
| Prop In Lane                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 0.00                                                                              |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |
| Lane Grp Cap(c), veh/h       | 535                                                                               | 951                                                                               | 111                                                                               | 2067                                                                              | 0                                                                                 | 0                                                                                 | 1651                                                                                | 736                                                                                 |                                                                                     |                                                                                     |
| V/C Ratio(X)                 | 0.14                                                                              | 0.85                                                                              | 0.78                                                                              | 0.68                                                                              | 0.00                                                                              | 0.00                                                                              | 0.54                                                                                | 0.69                                                                                |                                                                                     |                                                                                     |
| Avail Cap(c_a), veh/h        | 731                                                                               | 1301                                                                              | 185                                                                               | 2067                                                                              | 0                                                                                 | 0                                                                                 | 1651                                                                                | 736                                                                                 |                                                                                     |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Uniform Delay (d), s/veh     | 20.6                                                                              | 26.5                                                                              | 37.4                                                                              | 11.5                                                                              | 0.0                                                                               | 0.0                                                                               | 15.3                                                                                | 17.0                                                                                |                                                                                     |                                                                                     |
| Incr Delay (d2), s/veh       | 0.1                                                                               | 4.0                                                                               | 11.1                                                                              | 1.8                                                                               | 0.0                                                                               | 0.0                                                                               | 1.3                                                                                 | 5.3                                                                                 |                                                                                     |                                                                                     |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |
| %ile BackOfQ(50%),veh/ln     | 1.0                                                                               | 7.1                                                                               | 1.9                                                                               | 7.4                                                                               | 0.0                                                                               | 0.0                                                                               | 5.4                                                                                 | 7.6                                                                                 |                                                                                     |                                                                                     |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 20.7                                                                              | 30.5                                                                              | 48.5                                                                              | 13.3                                                                              | 0.0                                                                               | 0.0                                                                               | 16.6                                                                                | 22.3                                                                                |                                                                                     |                                                                                     |
| LnGrp LOS                    | C                                                                                 | C                                                                                 | D                                                                                 | B                                                                                 | A                                                                                 | A                                                                                 | B                                                                                   | C                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          | 884                                                                               |                                                                                   |                                                                                   | 1482                                                                              |                                                                                   |                                                                                   | 1399                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 29.7                                                                              |                                                                                   |                                                                                   | 15.3                                                                              |                                                                                   |                                                                                   | 18.7                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 2                                                                                 |                                                                                   | 5                                                                                 |                                                                                   | 6                                                                                 |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 52.0                                                                              |                                                                                   | 9.6                                                                               |                                                                                   | 42.4                                                                              |                                                                                   | 29.0                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 47.5                                                                              |                                                                                   | 8.5                                                                               |                                                                                   | 34.5                                                                              |                                                                                   | 33.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 24.0                                                                              |                                                                                   | 5.9                                                                               |                                                                                   | 22.7                                                                              |                                                                                   | 21.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 11.0                                                                              |                                                                                   | 0.0                                                                               |                                                                                   | 6.0                                                                               |                                                                                   | 3.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 19.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary 3: 12th Avenue & SR 198 EB Off Ramps

11/02/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                    |  |  |                                                                                     |  |  |
| Traffic Volume (veh/h)       | 664                                                                               | 0                                                                                 | 25                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 697                                                                                 | 189                                                                                 | 0                                                                                   | 510                                                                                 | 375                                                                                 |
| Future Volume (veh/h)        | 664                                                                               | 0                                                                                 | 25                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 697                                                                                 | 189                                                                                 | 0                                                                                   | 510                                                                                 | 375                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                 |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 0                                                                                 | 1856                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1856                                                                                | 1856                                                                                | 0                                                                                   | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 722                                                                               | 0                                                                                 | 27                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 758                                                                                 | 0                                                                                   | 0                                                                                   | 554                                                                                 | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 0                                                                                 | 3                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 3                                                                                   | 3                                                                                   | 0                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 905                                                                               | 0                                                                                 | 415                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 2142                                                                                |                                                                                     | 0                                                                                   | 2142                                                                                |                                                                                     |
| Arrive On Green              | 0.26                                                                              | 0.00                                                                              | 0.26                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.61                                                                                | 0.00                                                                                | 0.00                                                                                | 0.61                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 3428                                                                              | 0                                                                                 | 1572                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 3618                                                                                | 1572                                                                                | 0                                                                                   | 3618                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 722                                                                               | 0                                                                                 | 27                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 758                                                                                 | 0                                                                                   | 0                                                                                   | 554                                                                                 | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1714                                                                              | 0                                                                                 | 1572                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1763                                                                                | 1572                                                                                | 0                                                                                   | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 13.7                                                                              | 0.0                                                                               | 0.9                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 7.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 5.1                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 13.7                                                                              | 0.0                                                                               | 0.9                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 7.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 5.1                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               |                                                                                     | 1.00                                                                                | 0.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 905                                                                               | 0                                                                                 | 415                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 2142                                                                                |                                                                                     | 0                                                                                   | 2142                                                                                |                                                                                     |
| V/C Ratio(X)                 | 0.80                                                                              | 0.00                                                                              | 0.07                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.35                                                                                |                                                                                     | 0.00                                                                                | 0.26                                                                                |                                                                                     |
| Avail Cap(c_a), veh/h        | 1886                                                                              | 0                                                                                 | 865                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 2142                                                                                |                                                                                     | 0                                                                                   | 2142                                                                                |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 24.0                                                                              | 0.0                                                                               | 19.3                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 6.9                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 6.4                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 1.7                                                                               | 0.0                                                                               | 0.1                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 0.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.3                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 5.1                                                                               | 0.0                                                                               | 0.3                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 2.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 1.5                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 25.7                                                                              | 0.0                                                                               | 19.3                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 7.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 6.7                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   | A                                                                                  | A                                                                                   |                                                                                     | A                                                                                   | A                                                                                   |                                                                                     |
| Approach Vol, veh/h          | 749                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 758                                                                                |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 25.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 7.3                                                                                |                                                                                     |                                                                                     | 6.7                                                                                 |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | A                                                                                  |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 47.0                                                                              |                                                                                   |                                                                                   | 23.0                                                                              |                                                                                   |                                                                                   | 47.0                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               |                                                                                   |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                   | 4.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 42.5                                                                              |                                                                                   |                                                                                   | 38.5                                                                              |                                                                                   |                                                                                   | 42.5                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 9.5                                                                               |                                                                                   |                                                                                   | 15.7                                                                              |                                                                                   |                                                                                   | 7.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 5.5                                                                               |                                                                                   |                                                                                   | 2.7                                                                               |                                                                                   |                                                                                   | 3.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 13.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# HCM 6th Signalized Intersection Summary

## 4: Campus Drive & Lacey Boulevard

11/02/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 31                                                                                | 603                                                                               | 87                                                                                | 119                                                                               | 603                                                                               | 66                                                                                | 44                                                                                  | 73                                                                                  | 93                                                                                  | 68                                                                                  | 100                                                                                 | 19                                                                                  |
| Future Volume (veh/h)        | 31                                                                                | 603                                                                               | 87                                                                                | 119                                                                               | 603                                                                               | 66                                                                                | 44                                                                                  | 73                                                                                  | 93                                                                                  | 68                                                                                  | 100                                                                                 | 19                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 34                                                                                | 655                                                                               | 95                                                                                | 129                                                                               | 655                                                                               | 72                                                                                | 48                                                                                  | 79                                                                                  | 101                                                                                 | 74                                                                                  | 109                                                                                 | 21                                                                                  |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 60                                                                                | 860                                                                               | 383                                                                               | 165                                                                               | 1069                                                                              | 477                                                                               | 75                                                                                  | 252                                                                                 | 322                                                                                 | 138                                                                                 | 697                                                                                 | 590                                                                                 |
| Arrive On Green              | 0.03                                                                              | 0.24                                                                              | 0.24                                                                              | 0.09                                                                              | 0.30                                                                              | 0.30                                                                              | 0.04                                                                                | 0.34                                                                                | 0.34                                                                                | 0.08                                                                                | 0.38                                                                                | 0.38                                                                                |
| Sat Flow, veh/h              | 1767                                                                              | 3526                                                                              | 1572                                                                              | 1767                                                                              | 3526                                                                              | 1572                                                                              | 1767                                                                                | 740                                                                                 | 946                                                                                 | 1767                                                                                | 1856                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 34                                                                                | 655                                                                               | 95                                                                                | 129                                                                               | 655                                                                               | 72                                                                                | 48                                                                                  | 0                                                                                   | 180                                                                                 | 74                                                                                  | 109                                                                                 | 21                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1767                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                                | 0                                                                                   | 1685                                                                                | 1767                                                                                | 1856                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 1.4                                                                               | 12.7                                                                              | 3.6                                                                               | 5.2                                                                               | 11.7                                                                              | 1.8                                                                               | 2.0                                                                                 | 0.0                                                                                 | 5.8                                                                                 | 3.0                                                                                 | 2.9                                                                                 | 0.6                                                                                 |
| Cycle Q Clear(g_c), s        | 1.4                                                                               | 12.7                                                                              | 3.6                                                                               | 5.2                                                                               | 11.7                                                                              | 1.8                                                                               | 2.0                                                                                 | 0.0                                                                                 | 5.8                                                                                 | 3.0                                                                                 | 2.9                                                                                 | 0.6                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 0.56                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 60                                                                                | 860                                                                               | 383                                                                               | 165                                                                               | 1069                                                                              | 477                                                                               | 75                                                                                  | 0                                                                                   | 573                                                                                 | 138                                                                                 | 697                                                                                 | 590                                                                                 |
| V/C Ratio(X)                 | 0.57                                                                              | 0.76                                                                              | 0.25                                                                              | 0.78                                                                              | 0.61                                                                              | 0.15                                                                              | 0.64                                                                                | 0.00                                                                                | 0.31                                                                                | 0.54                                                                                | 0.16                                                                                | 0.04                                                                                |
| Avail Cap(c_a), veh/h        | 144                                                                               | 1170                                                                              | 522                                                                               | 317                                                                               | 1516                                                                              | 676                                                                               | 163                                                                                 | 0                                                                                   | 573                                                                                 | 226                                                                                 | 697                                                                                 | 590                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 35.0                                                                              | 25.8                                                                              | 22.4                                                                              | 32.6                                                                              | 21.9                                                                              | 9.5                                                                               | 34.6                                                                                | 0.0                                                                                 | 17.9                                                                                | 32.6                                                                                | 15.2                                                                                | 14.5                                                                                |
| Incr Delay (d2), s/veh       | 8.1                                                                               | 2.0                                                                               | 0.3                                                                               | 7.9                                                                               | 0.6                                                                               | 0.1                                                                               | 8.7                                                                                 | 0.0                                                                                 | 1.4                                                                                 | 3.2                                                                                 | 0.5                                                                                 | 0.1                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.7                                                                               | 5.2                                                                               | 1.3                                                                               | 2.5                                                                               | 4.6                                                                               | 0.8                                                                               | 1.0                                                                                 | 0.0                                                                                 | 2.4                                                                                 | 1.4                                                                                 | 1.2                                                                                 | 0.2                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 43.0                                                                              | 27.8                                                                              | 22.7                                                                              | 40.4                                                                              | 22.5                                                                              | 9.6                                                                               | 43.3                                                                                | 0.0                                                                                 | 19.3                                                                                | 35.9                                                                                | 15.7                                                                                | 14.6                                                                                |
| LnGrp LOS                    | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 | A                                                                                 | D                                                                                   | A                                                                                   | B                                                                                   | D                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 784                                                                               |                                                                                   |                                                                                   | 856                                                                               |                                                                                   |                                                                                     | 228                                                                                 |                                                                                     |                                                                                     | 204                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 27.9                                                                              |                                                                                   |                                                                                   | 24.1                                                                              |                                                                                   |                                                                                     | 24.4                                                                                |                                                                                     |                                                                                     | 22.9                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 10.2                                                                              | 29.5                                                                              | 11.4                                                                              | 22.4                                                                              | 7.6                                                                               | 32.1                                                                              | 7.0                                                                                 | 26.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 9.4                                                                               | 25.0                                                                              | 13.2                                                                              | 24.4                                                                              | 6.8                                                                               | 27.6                                                                              | 6.0                                                                                 | 31.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 5.0                                                                               | 7.8                                                                               | 7.2                                                                               | 14.7                                                                              | 4.0                                                                               | 4.9                                                                               | 3.4                                                                                 | 13.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.9                                                                               | 0.1                                                                               | 3.2                                                                               | 0.0                                                                               | 0.6                                                                               | 0.0                                                                                 | 4.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 25.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 7: 11th Avenue & Lacey Boulevard

11/02/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 128                                                                               | 267                                                                               | 170                                                                               | 65                                                                                | 337                                                                               | 65                                                                                | 400                                                                                | 687                                                                                 | 77                                                                                  | 94                                                                                  | 772                                                                                 | 203                                                                                 |
| Future Volume (veh/h)        | 128                                                                               | 267                                                                               | 170                                                                               | 65                                                                                | 337                                                                               | 65                                                                                | 400                                                                                | 687                                                                                 | 77                                                                                  | 94                                                                                  | 772                                                                                 | 203                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                 |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                               | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 139                                                                               | 290                                                                               | 185                                                                               | 71                                                                                | 366                                                                               | 71                                                                                | 435                                                                                | 747                                                                                 | 84                                                                                  | 102                                                                                 | 839                                                                                 | 221                                                                                 |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                  | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 220                                                                               | 665                                                                               | 296                                                                               | 92                                                                                | 521                                                                               | 100                                                                               | 527                                                                                | 1407                                                                                | 158                                                                                 | 131                                                                                 | 1271                                                                                | 567                                                                                 |
| Arrive On Green              | 0.06                                                                              | 0.19                                                                              | 0.19                                                                              | 0.05                                                                              | 0.18                                                                              | 0.18                                                                              | 0.15                                                                               | 0.44                                                                                | 0.44                                                                                | 0.07                                                                                | 0.36                                                                                | 0.36                                                                                |
| Sat Flow, veh/h              | 3428                                                                              | 3526                                                                              | 1572                                                                              | 1767                                                                              | 2950                                                                              | 567                                                                               | 3428                                                                               | 3195                                                                                | 359                                                                                 | 1767                                                                                | 3526                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 139                                                                               | 290                                                                               | 185                                                                               | 71                                                                                | 217                                                                               | 220                                                                               | 435                                                                                | 412                                                                                 | 419                                                                                 | 102                                                                                 | 839                                                                                 | 221                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1714                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 1754                                                                              | 1714                                                                               | 1763                                                                                | 1791                                                                                | 1767                                                                                | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 2.9                                                                               | 5.3                                                                               | 5.2                                                                               | 2.9                                                                               | 8.5                                                                               | 8.7                                                                               | 9.0                                                                                | 12.5                                                                                | 12.6                                                                                | 4.2                                                                                 | 14.7                                                                                | 7.7                                                                                 |
| Cycle Q Clear(g_c), s        | 2.9                                                                               | 5.3                                                                               | 5.2                                                                               | 2.9                                                                               | 8.5                                                                               | 8.7                                                                               | 9.0                                                                                | 12.5                                                                                | 12.6                                                                                | 4.2                                                                                 | 14.7                                                                                | 7.7                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.32                                                                              | 1.00                                                                               |                                                                                     | 0.20                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 220                                                                               | 665                                                                               | 296                                                                               | 92                                                                                | 311                                                                               | 310                                                                               | 527                                                                                | 776                                                                                 | 789                                                                                 | 131                                                                                 | 1271                                                                                | 567                                                                                 |
| V/C Ratio(X)                 | 0.63                                                                              | 0.44                                                                              | 0.62                                                                              | 0.77                                                                              | 0.70                                                                              | 0.71                                                                              | 0.82                                                                               | 0.53                                                                                | 0.53                                                                                | 0.78                                                                                | 0.66                                                                                | 0.39                                                                                |
| Avail Cap(c_a), veh/h        | 233                                                                               | 1276                                                                              | 569                                                                               | 154                                                                               | 672                                                                               | 668                                                                               | 583                                                                                | 776                                                                                 | 789                                                                                 | 204                                                                                 | 1271                                                                                | 567                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 33.5                                                                              | 26.4                                                                              | 11.9                                                                              | 34.4                                                                              | 28.4                                                                              | 28.5                                                                              | 30.1                                                                               | 15.0                                                                                | 15.0                                                                                | 33.4                                                                                | 19.7                                                                                | 17.5                                                                                |
| Incr Delay (d2), s/veh       | 5.0                                                                               | 0.5                                                                               | 2.2                                                                               | 12.7                                                                              | 2.8                                                                               | 3.0                                                                               | 8.7                                                                                | 2.6                                                                                 | 2.6                                                                                 | 9.6                                                                                 | 2.7                                                                                 | 2.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.3                                                                               | 2.2                                                                               | 2.9                                                                               | 1.5                                                                               | 3.6                                                                               | 3.7                                                                               | 4.2                                                                                | 5.0                                                                                 | 5.1                                                                                 | 2.1                                                                                 | 5.9                                                                                 | 2.9                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 38.6                                                                              | 26.8                                                                              | 14.1                                                                              | 47.1                                                                              | 31.2                                                                              | 31.5                                                                              | 38.8                                                                               | 17.6                                                                                | 17.6                                                                                | 43.0                                                                                | 22.4                                                                                | 19.5                                                                                |
| LnGrp LOS                    | D                                                                                 | C                                                                                 | B                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                  | B                                                                                   | B                                                                                   | D                                                                                   | C                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 614                                                                               |                                                                                   |                                                                                   | 508                                                                               |                                                                                   |                                                                                   | 1266                                                                               |                                                                                     |                                                                                     | 1162                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 25.6                                                                              |                                                                                   |                                                                                   | 33.6                                                                              |                                                                                   |                                                                                   | 24.9                                                                               |                                                                                     |                                                                                     | 23.7                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                  |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 9.9                                                                               | 36.9                                                                              | 8.3                                                                               | 18.4                                                                              | 15.8                                                                              | 31.0                                                                              | 9.2                                                                                | 17.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 8.5                                                                               | 30.5                                                                              | 6.4                                                                               | 26.6                                                                              | 12.5                                                                              | 26.5                                                                              | 5.0                                                                                | 28.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 6.2                                                                               | 14.6                                                                              | 4.9                                                                               | 7.3                                                                               | 11.0                                                                              | 16.7                                                                              | 4.9                                                                                | 10.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 4.7                                                                               | 0.0                                                                               | 2.3                                                                               | 0.3                                                                               | 4.5                                                                               | 0.0                                                                                | 2.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 25.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 8: 11th Avenue & 7th Street

11/02/2020

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 57                                                                                | 146                                                                               | 102                                                                               | 113                                                                               | 164                                                                               | 74                                                                                | 238                                                                                 | 685                                                                                 | 152                                                                                 | 110                                                                                 | 498                                                                                 | 99                                                                                  |
| Future Volume (veh/h)        | 57                                                                                | 146                                                                               | 102                                                                               | 113                                                                               | 164                                                                               | 74                                                                                | 238                                                                                 | 685                                                                                 | 152                                                                                 | 110                                                                                 | 498                                                                                 | 99                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 62                                                                                | 159                                                                               | 111                                                                               | 123                                                                               | 178                                                                               | 80                                                                                | 259                                                                                 | 745                                                                                 | 165                                                                                 | 120                                                                                 | 541                                                                                 | 108                                                                                 |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 171                                                                               | 258                                                                               | 170                                                                               | 155                                                                               | 396                                                                               | 171                                                                               | 303                                                                                 | 1565                                                                                | 698                                                                                 | 153                                                                                 | 1267                                                                                | 565                                                                                 |
| Arrive On Green              | 0.05                                                                              | 0.13                                                                              | 0.13                                                                              | 0.09                                                                              | 0.16                                                                              | 0.16                                                                              | 0.17                                                                                | 0.44                                                                                | 0.44                                                                                | 0.09                                                                                | 0.36                                                                                | 0.36                                                                                |
| Sat Flow, veh/h              | 3428                                                                              | 2038                                                                              | 1339                                                                              | 1767                                                                              | 2397                                                                              | 1035                                                                              | 1767                                                                                | 3526                                                                                | 1572                                                                                | 1767                                                                                | 3526                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 62                                                                                | 136                                                                               | 134                                                                               | 123                                                                               | 129                                                                               | 129                                                                               | 259                                                                                 | 745                                                                                 | 165                                                                                 | 120                                                                                 | 541                                                                                 | 108                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1714                                                                              | 1763                                                                              | 1614                                                                              | 1767                                                                              | 1763                                                                              | 1669                                                                              | 1767                                                                                | 1763                                                                                | 1572                                                                                | 1767                                                                                | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 1.2                                                                               | 5.2                                                                               | 5.6                                                                               | 4.8                                                                               | 4.7                                                                               | 4.9                                                                               | 10.1                                                                                | 10.5                                                                                | 2.8                                                                                 | 4.7                                                                                 | 8.2                                                                                 | 3.3                                                                                 |
| Cycle Q Clear(g_c), s        | 1.2                                                                               | 5.2                                                                               | 5.6                                                                               | 4.8                                                                               | 4.7                                                                               | 4.9                                                                               | 10.1                                                                                | 10.5                                                                                | 2.8                                                                                 | 4.7                                                                                 | 8.2                                                                                 | 3.3                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.83                                                                              | 1.00                                                                              |                                                                                   | 0.62                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 171                                                                               | 224                                                                               | 205                                                                               | 155                                                                               | 291                                                                               | 275                                                                               | 303                                                                                 | 1565                                                                                | 698                                                                                 | 153                                                                                 | 1267                                                                                | 565                                                                                 |
| V/C Ratio(X)                 | 0.36                                                                              | 0.61                                                                              | 0.65                                                                              | 0.79                                                                              | 0.44                                                                              | 0.47                                                                              | 0.86                                                                                | 0.48                                                                                | 0.24                                                                                | 0.78                                                                                | 0.43                                                                                | 0.19                                                                                |
| Avail Cap(c_a), veh/h        | 242                                                                               | 648                                                                               | 594                                                                               | 175                                                                               | 698                                                                               | 661                                                                               | 340                                                                                 | 1565                                                                                | 698                                                                                 | 232                                                                                 | 1267                                                                                | 565                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 32.5                                                                              | 29.2                                                                              | 29.4                                                                              | 31.6                                                                              | 26.6                                                                              | 26.7                                                                              | 28.4                                                                                | 13.9                                                                                | 4.6                                                                                 | 31.6                                                                                | 17.1                                                                                | 15.6                                                                                |
| Incr Delay (d2), s/veh       | 1.3                                                                               | 2.7                                                                               | 3.5                                                                               | 19.4                                                                              | 1.1                                                                               | 1.2                                                                               | 17.4                                                                                | 1.0                                                                                 | 0.8                                                                                 | 9.4                                                                                 | 1.1                                                                                 | 0.8                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.5                                                                               | 2.2                                                                               | 2.2                                                                               | 2.9                                                                               | 2.0                                                                               | 2.0                                                                               | 5.5                                                                                 | 3.9                                                                                 | 1.6                                                                                 | 2.3                                                                                 | 3.2                                                                                 | 1.3                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 33.8                                                                              | 31.9                                                                              | 32.9                                                                              | 51.0                                                                              | 27.6                                                                              | 27.9                                                                              | 45.9                                                                                | 14.9                                                                                | 5.4                                                                                 | 41.0                                                                                | 18.2                                                                                | 16.3                                                                                |
| LnGrp LOS                    | C                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                   | B                                                                                   | A                                                                                   | D                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 332                                                                               |                                                                                   |                                                                                   | 381                                                                               |                                                                                   |                                                                                   | 1169                                                                                |                                                                                     |                                                                                     | 769                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 32.6                                                                              |                                                                                   |                                                                                   | 35.3                                                                              |                                                                                   |                                                                                   | 20.4                                                                                |                                                                                     |                                                                                     | 21.5                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 10.6                                                                              | 35.9                                                                              | 10.7                                                                              | 13.5                                                                              | 16.6                                                                              | 29.9                                                                              | 8.0                                                                                 | 16.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 9.3                                                                               | 29.7                                                                              | 7.0                                                                               | 26.0                                                                              | 13.6                                                                              | 25.4                                                                              | 5.0                                                                                 | 28.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 6.7                                                                               | 12.5                                                                              | 6.8                                                                               | 7.6                                                                               | 12.1                                                                              | 10.2                                                                              | 3.2                                                                                 | 6.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 5.2                                                                               | 0.0                                                                               | 1.4                                                                               | 0.1                                                                               | 3.4                                                                               | 0.0                                                                                 | 1.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 24.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary 10: 11th Avenue & 5th Street

11/02/2020

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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |                                                                                   |  |                                                                                   |  |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)       | 50                                                                                | 0                                                                                 | 64                                                                                | 6                                                                                 | 0                                                                                 | 8                                                                                 | 181                                                                                 | 1387                                                                                | 36                                                                                  | 2                                                                                   | 778                                                                                 | 119                                                                                 |
| Future Volume (veh/h)        | 50                                                                                | 0                                                                                 | 64                                                                                | 6                                                                                 | 0                                                                                 | 8                                                                                 | 181                                                                                 | 1387                                                                                | 36                                                                                  | 2                                                                                   | 778                                                                                 | 119                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 54                                                                                | 0                                                                                 | 70                                                                                | 7                                                                                 | 0                                                                                 | 9                                                                                 | 197                                                                                 | 1508                                                                                | 39                                                                                  | 2                                                                                   | 846                                                                                 | 129                                                                                 |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 233                                                                               | 0                                                                                 | 118                                                                               | 101                                                                               | 21                                                                                | 53                                                                                | 378                                                                                 | 2497                                                                                | 64                                                                                  | 5                                                                                   | 1763                                                                                | 787                                                                                 |
| Arrive On Green              | 0.08                                                                              | 0.00                                                                              | 0.08                                                                              | 0.08                                                                              | 0.00                                                                              | 0.08                                                                              | 0.21                                                                                | 0.71                                                                                | 0.71                                                                                | 0.00                                                                                | 0.50                                                                                | 0.50                                                                                |
| Sat Flow, veh/h              | 1395                                                                              | 0                                                                                 | 1572                                                                              | 270                                                                               | 277                                                                               | 704                                                                               | 1767                                                                                | 3511                                                                                | 91                                                                                  | 1767                                                                                | 3526                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 54                                                                                | 0                                                                                 | 70                                                                                | 16                                                                                | 0                                                                                 | 0                                                                                 | 197                                                                                 | 756                                                                                 | 791                                                                                 | 2                                                                                   | 846                                                                                 | 129                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1395                                                                              | 0                                                                                 | 1572                                                                              | 1252                                                                              | 0                                                                                 | 0                                                                                 | 1767                                                                                | 1763                                                                                | 1839                                                                                | 1767                                                                                | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 0.0                                                                               | 2.8                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 6.3                                                                                 | 13.9                                                                                | 13.9                                                                                | 0.1                                                                                 | 10.1                                                                                | 2.9                                                                                 |
| Cycle Q Clear(g_c), s        | 1.9                                                                               | 0.0                                                                               | 2.8                                                                               | 2.8                                                                               | 0.0                                                                               | 0.0                                                                               | 6.3                                                                                 | 13.9                                                                                | 13.9                                                                                | 0.1                                                                                 | 10.1                                                                                | 2.9                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 0.44                                                                              |                                                                                   | 0.56                                                                              | 1.00                                                                                |                                                                                     | 0.05                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 233                                                                               | 0                                                                                 | 118                                                                               | 175                                                                               | 0                                                                                 | 0                                                                                 | 378                                                                                 | 1254                                                                                | 1308                                                                                | 5                                                                                   | 1763                                                                                | 787                                                                                 |
| V/C Ratio(X)                 | 0.23                                                                              | 0.00                                                                              | 0.59                                                                              | 0.09                                                                              | 0.00                                                                              | 0.00                                                                              | 0.52                                                                                | 0.60                                                                                | 0.60                                                                                | 0.41                                                                                | 0.48                                                                                | 0.16                                                                                |
| Avail Cap(c_a), veh/h        | 696                                                                               | 0                                                                                 | 639                                                                               | 656                                                                               | 0                                                                                 | 0                                                                                 | 511                                                                                 | 1254                                                                                | 1308                                                                                | 138                                                                                 | 1763                                                                                | 787                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 28.2                                                                              | 0.0                                                                               | 28.6                                                                              | 27.6                                                                              | 0.0                                                                               | 0.0                                                                               | 22.3                                                                                | 4.7                                                                                 | 4.7                                                                                 | 31.8                                                                                | 10.5                                                                                | 8.7                                                                                 |
| Incr Delay (d2), s/veh       | 0.5                                                                               | 0.0                                                                               | 4.7                                                                               | 0.2                                                                               | 0.0                                                                               | 0.0                                                                               | 1.1                                                                                 | 2.2                                                                                 | 2.1                                                                                 | 48.3                                                                                | 0.9                                                                                 | 0.4                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.8                                                                               | 0.0                                                                               | 1.1                                                                               | 0.2                                                                               | 0.0                                                                               | 0.0                                                                               | 2.6                                                                                 | 3.7                                                                                 | 3.9                                                                                 | 0.1                                                                                 | 3.6                                                                                 | 0.9                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 28.7                                                                              | 0.0                                                                               | 33.3                                                                              | 27.9                                                                              | 0.0                                                                               | 0.0                                                                               | 23.4                                                                                | 6.8                                                                                 | 6.8                                                                                 | 80.1                                                                                | 11.5                                                                                | 9.2                                                                                 |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | C                                                                                 | C                                                                                 | A                                                                                 | A                                                                                 | C                                                                                   | A                                                                                   | A                                                                                   | F                                                                                   | B                                                                                   | A                                                                                   |
| Approach Vol, veh/h          | 124                                                                               |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 1744                                                                                |                                                                                     |                                                                                     | 977                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 31.3                                                                              |                                                                                   |                                                                                   | 27.9                                                                              |                                                                                   |                                                                                   | 8.7                                                                                 |                                                                                     |                                                                                     | 11.3                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 4                                                                                 |                                                                                   | 5                                                                                 | 6                                                                                 | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 4.7                                                                               | 50.0                                                                              | 9.3                                                                               |                                                                                   | 18.2                                                                              | 36.5                                                                              | 9.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 5.0                                                                               | 45.5                                                                              | 26.0                                                                              |                                                                                   | 18.5                                                                              | 32.0                                                                              | 26.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 2.1                                                                               | 15.9                                                                              | 4.8                                                                               |                                                                                   | 8.3                                                                               | 12.1                                                                              | 4.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 14.4                                                                              | 0.5                                                                               |                                                                                   | 0.4                                                                               | 6.5                                                                               | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 10.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 11: 11th Avenue & SR 198 WB On Ramp/4th Street

11/02/2020

|                              |  |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |      |      |                                                                                     |                                                                                     |
|------------------------------|------------------------------------------------------------------------------------|------|-----|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                                | EBT  | EBR | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR  | SBL  | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                    |      |     |  |  |  |  |  |      |      |  |  |
| Traffic Volume (veh/h)       | 0                                                                                  | 0    | 0   | 182                                                                               | 25                                                                                | 454                                                                               | 80                                                                                  | 1161                                                                                | 0    | 0    | 642                                                                                 | 252                                                                                 |
| Future Volume (veh/h)        | 0                                                                                  | 0    | 0   | 182                                                                               | 25                                                                                | 454                                                                               | 80                                                                                  | 1161                                                                                | 0    | 0    | 642                                                                                 | 252                                                                                 |
| Initial Q (Qb), veh          |                                                                                    |      |     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0    | 0    | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          |                                                                                    |      |     | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00 | 1.00 |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             |                                                                                    |      |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00 | 1.00 | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                    |      |     | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |      |      | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       |                                                                                    |      |     | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 0    | 0    | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         |                                                                                    |      |     | 198                                                                               | 27                                                                                | 493                                                                               | 87                                                                                  | 1262                                                                                | 0    | 0    | 698                                                                                 | 274                                                                                 |
| Peak Hour Factor             |                                                                                    |      |     | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92 | 0.92 | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         |                                                                                    |      |     | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 0    | 0    | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   |                                                                                    |      |     | 615                                                                               | 646                                                                               | 547                                                                               | 112                                                                                 | 1904                                                                                | 0    | 0    | 1484                                                                                | 662                                                                                 |
| Arrive On Green              |                                                                                    |      |     | 0.35                                                                              | 0.35                                                                              | 0.35                                                                              | 0.06                                                                                | 0.54                                                                                | 0.00 | 0.00 | 0.42                                                                                | 0.42                                                                                |
| Sat Flow, veh/h              |                                                                                    |      |     | 1767                                                                              | 1856                                                                              | 1572                                                                              | 1767                                                                                | 3618                                                                                | 0    | 0    | 3618                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         |                                                                                    |      |     | 198                                                                               | 27                                                                                | 493                                                                               | 87                                                                                  | 1262                                                                                | 0    | 0    | 698                                                                                 | 274                                                                                 |
| Grp Sat Flow(s),veh/h/ln     |                                                                                    |      |     | 1767                                                                              | 1856                                                                              | 1572                                                                              | 1767                                                                                | 1763                                                                                | 0    | 0    | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              |                                                                                    |      |     | 6.6                                                                               | 0.8                                                                               | 24.0                                                                              | 3.9                                                                                 | 20.6                                                                                | 0.0  | 0.0  | 11.5                                                                                | 9.8                                                                                 |
| Cycle Q Clear(g_c), s        |                                                                                    |      |     | 6.6                                                                               | 0.8                                                                               | 24.0                                                                              | 3.9                                                                                 | 20.6                                                                                | 0.0  | 0.0  | 11.5                                                                                | 9.8                                                                                 |
| Prop In Lane                 |                                                                                    |      |     | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 0.00 | 0.00 |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       |                                                                                    |      |     | 615                                                                               | 646                                                                               | 547                                                                               | 112                                                                                 | 1904                                                                                | 0    | 0    | 1484                                                                                | 662                                                                                 |
| V/C Ratio(X)                 |                                                                                    |      |     | 0.32                                                                              | 0.04                                                                              | 0.90                                                                              | 0.78                                                                                | 0.66                                                                                | 0.00 | 0.00 | 0.47                                                                                | 0.41                                                                                |
| Avail Cap(c_a), veh/h        |                                                                                    |      |     | 823                                                                               | 864                                                                               | 732                                                                               | 224                                                                                 | 1904                                                                                | 0    | 0    | 1484                                                                                | 662                                                                                 |
| HCM Platoon Ratio            |                                                                                    |      |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00 | 1.00 | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           |                                                                                    |      |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 0.00 | 0.00 | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     |                                                                                    |      |     | 19.3                                                                              | 17.4                                                                              | 24.9                                                                              | 37.1                                                                                | 13.3                                                                                | 0.0  | 0.0  | 16.8                                                                                | 16.4                                                                                |
| Incr Delay (d2), s/veh       |                                                                                    |      |     | 0.3                                                                               | 0.0                                                                               | 11.6                                                                              | 10.8                                                                                | 1.8                                                                                 | 0.0  | 0.0  | 1.1                                                                                 | 1.9                                                                                 |
| Initial Q Delay(d3),s/veh    |                                                                                    |      |     | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0  | 0.0  | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     |                                                                                    |      |     | 2.5                                                                               | 0.3                                                                               | 9.7                                                                               | 2.0                                                                                 | 7.8                                                                                 | 0.0  | 0.0  | 4.5                                                                                 | 3.6                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                    |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |      |      |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         |                                                                                    |      |     | 19.6                                                                              | 17.4                                                                              | 36.5                                                                              | 47.9                                                                                | 15.1                                                                                | 0.0  | 0.0  | 17.9                                                                                | 18.3                                                                                |
| LnGrp LOS                    |                                                                                    |      |     | B                                                                                 | B                                                                                 | D                                                                                 | D                                                                                   | B                                                                                   | A    | A    | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                    |      |     |                                                                                   | 718                                                                               |                                                                                   |                                                                                     | 1349                                                                                |      |      | 972                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                    |      |     |                                                                                   | 31.1                                                                              |                                                                                   |                                                                                     | 17.2                                                                                |      |      | 18.0                                                                                |                                                                                     |
| Approach LOS                 |                                                                                    |      |     |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | B                                                                                   |      |      | B                                                                                   |                                                                                     |
| Timer - Assigned Phs         |                                                                                    | 2    |     |                                                                                   | 5                                                                                 | 6                                                                                 |                                                                                     | 8                                                                                   |      |      |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                    | 48.0 |     |                                                                                   | 9.6                                                                               | 38.4                                                                              |                                                                                     | 32.5                                                                                |      |      |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                    | 4.5  |     |                                                                                   | 4.5                                                                               | 4.5                                                                               |                                                                                     | 4.5                                                                                 |      |      |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                    | 43.5 |     |                                                                                   | 10.2                                                                              | 28.8                                                                              |                                                                                     | 37.5                                                                                |      |      |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                    | 22.6 |     |                                                                                   | 5.9                                                                               | 13.5                                                                              |                                                                                     | 26.0                                                                                |      |      |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                    | 9.8  |     |                                                                                   | 0.1                                                                               | 5.0                                                                               |                                                                                     | 2.1                                                                                 |      |      |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                    |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |      |      |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                    |      |     | 20.8                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |      |      |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                    |      |     | C                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |      |      |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary 12: 11th Avenue & SR 198 EB Off Ramp/3rd Street

11/02/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |                                                                                   |                                                                                   |                                                                                   |                                                                                    |  |  |  |  |                                                                                     |
| Traffic Volume (veh/h)       | 373                                                                               | 216                                                                               | 131                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 872                                                                                 | 207                                                                                 | 171                                                                                 | 658                                                                                 | 0                                                                                   |
| Future Volume (veh/h)        | 373                                                                               | 216                                                                               | 131                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 872                                                                                 | 207                                                                                 | 171                                                                                 | 658                                                                                 | 0                                                                                   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                 |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 0                                                                                   |
| Adj Flow Rate, veh/h         | 405                                                                               | 235                                                                               | 142                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 948                                                                                 | 225                                                                                 | 186                                                                                 | 715                                                                                 | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 0                                                                                   |
| Cap, veh/h                   | 438                                                                               | 254                                                                               | 606                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1180                                                                                | 526                                                                                 | 221                                                                                 | 1803                                                                                | 0                                                                                   |
| Arrive On Green              | 0.39                                                                              | 0.39                                                                              | 0.39                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.33                                                                                | 0.33                                                                                | 0.12                                                                                | 0.51                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 1138                                                                              | 660                                                                               | 1572                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 3618                                                                                | 1572                                                                                | 1767                                                                                | 3618                                                                                | 0                                                                                   |
| Grp Volume(v), veh/h         | 640                                                                               | 0                                                                                 | 142                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 948                                                                                 | 225                                                                                 | 186                                                                                 | 715                                                                                 | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1799                                                                              | 0                                                                                 | 1572                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1763                                                                                | 1572                                                                                | 1767                                                                                | 1763                                                                                | 0                                                                                   |
| Q Serve(g_s), s              | 29.6                                                                              | 0.0                                                                               | 5.3                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 21.3                                                                                | 9.7                                                                                 | 9.0                                                                                 | 10.8                                                                                | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 29.6                                                                              | 0.0                                                                               | 5.3                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 21.3                                                                                | 9.7                                                                                 | 9.0                                                                                 | 10.8                                                                                | 0.0                                                                                 |
| Prop In Lane                 | 0.63                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.00                                                                                |
| Lane Grp Cap(c), veh/h       | 693                                                                               | 0                                                                                 | 606                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1180                                                                                | 526                                                                                 | 221                                                                                 | 1803                                                                                | 0                                                                                   |
| V/C Ratio(X)                 | 0.92                                                                              | 0.00                                                                              | 0.23                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.80                                                                                | 0.43                                                                                | 0.84                                                                                | 0.40                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 754                                                                               | 0                                                                                 | 660                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1180                                                                                | 526                                                                                 | 234                                                                                 | 1803                                                                                | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 25.5                                                                              | 0.0                                                                               | 18.1                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 26.3                                                                                | 22.5                                                                                | 37.2                                                                                | 13.0                                                                                | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 16.3                                                                              | 0.0                                                                               | 0.2                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 5.8                                                                                 | 2.5                                                                                 | 22.6                                                                                | 0.7                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 14.3                                                                              | 0.0                                                                               | 1.8                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 9.2                                                                                 | 3.7                                                                                 | 5.2                                                                                 | 4.2                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 41.8                                                                              | 0.0                                                                               | 18.3                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 32.2                                                                                | 25.0                                                                                | 59.8                                                                                | 13.7                                                                                | 0.0                                                                                 |
| LnGrp LOS                    | D                                                                                 | A                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   | A                                                                                  | C                                                                                   | C                                                                                   | E                                                                                   | B                                                                                   | A                                                                                   |
| Approach Vol, veh/h          | 782                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 1173                                                                               |                                                                                     |                                                                                     | 901                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 37.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 30.8                                                                               |                                                                                     |                                                                                     | 23.2                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | C                                                                                  |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 15.4                                                                              | 33.6                                                                              | 38.0                                                                              |                                                                                   | 49.0                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 11.5                                                                              | 28.5                                                                              | 36.5                                                                              |                                                                                   | 44.5                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 11.0                                                                              | 23.3                                                                              | 31.6                                                                              |                                                                                   | 12.8                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 3.0                                                                               | 2.0                                                                               |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 30.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

HCM 6th AWSC  
5: Campus Dr/Campus Drive & 7th Street

11/02/2020

| Intersection              |    |  |  |  |  |  |  |  |  |  |  |  |
|---------------------------|----|--|--|--|--|--|--|--|--|--|--|--|
| Intersection Delay, s/veh | 15 |  |  |  |  |  |  |  |  |  |  |  |
| Intersection LOS          | B  |  |  |  |  |  |  |  |  |  |  |  |

| Movement            | EBL                                                                               | EBT                                                                               | EBR  | WBL                                                                               | WBT                                                                               | WBR  | NBL  | NBT                                                                                 | NBR  | SBL  | SBT                                                                                 | SBR  |
|---------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|
| Lane Configurations |  |  |      |  |  |      |      |  |      |      |  |      |
| Traffic Vol, veh/h  | 127                                                                               | 181                                                                               | 48   | 51                                                                                | 223                                                                               | 48   | 43   | 122                                                                                 | 30   | 34   | 140                                                                                 | 51   |
| Future Vol, veh/h   | 127                                                                               | 181                                                                               | 48   | 51                                                                                | 223                                                                               | 48   | 43   | 122                                                                                 | 30   | 34   | 140                                                                                 | 51   |
| Peak Hour Factor    | 0.92                                                                              | 0.92                                                                              | 0.92 | 0.92                                                                              | 0.92                                                                              | 0.92 | 0.92 | 0.92                                                                                | 0.92 | 0.92 | 0.92                                                                                | 0.92 |
| Heavy Vehicles, %   | 3                                                                                 | 3                                                                                 | 3    | 3                                                                                 | 3                                                                                 | 3    | 3    | 3                                                                                   | 3    | 3    | 3                                                                                   | 3    |
| Mvmt Flow           | 138                                                                               | 197                                                                               | 52   | 55                                                                                | 242                                                                               | 52   | 47   | 133                                                                                 | 33   | 37   | 152                                                                                 | 55   |
| Number of Lanes     | 1                                                                                 | 1                                                                                 | 0    | 1                                                                                 | 1                                                                                 | 0    | 0    | 1                                                                                   | 0    | 0    | 1                                                                                   | 0    |

| Approach                   | EB   | WB   | NB   | SB   |
|----------------------------|------|------|------|------|
| Opposing Approach          | WB   | EB   | SB   | NB   |
| Opposing Lanes             | 2    | 2    | 1    | 1    |
| Conflicting Approach Left  | SB   | NB   | EB   | WB   |
| Conflicting Lanes Left     | 1    | 1    | 2    | 2    |
| Conflicting Approach Right | NB   | SB   | WB   | EB   |
| Conflicting Lanes Right    | 1    | 1    | 2    | 2    |
| HCM Control Delay          | 14.3 | 16.4 | 14.1 | 14.9 |
| HCM LOS                    | B    | C    | B    | B    |

| Lane                   | NBLn1 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | SBLn1 |
|------------------------|-------|-------|-------|-------|-------|-------|
| Vol Left, %            | 22%   | 100%  | 0%    | 100%  | 0%    | 15%   |
| Vol Thru, %            | 63%   | 0%    | 79%   | 0%    | 82%   | 62%   |
| Vol Right, %           | 15%   | 0%    | 21%   | 0%    | 18%   | 23%   |
| Sign Control           | Stop  | Stop  | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 195   | 127   | 229   | 51    | 271   | 225   |
| LT Vol                 | 43    | 127   | 0     | 51    | 0     | 34    |
| Through Vol            | 122   | 0     | 181   | 0     | 223   | 140   |
| RT Vol                 | 30    | 0     | 48    | 0     | 48    | 51    |
| Lane Flow Rate         | 212   | 138   | 249   | 55    | 295   | 245   |
| Geometry Grp           | 2     | 7     | 7     | 7     | 7     | 2     |
| Degree of Util (X)     | 0.396 | 0.28  | 0.46  | 0.113 | 0.55  | 0.447 |
| Departure Headway (Hd) | 6.721 | 7.311 | 6.648 | 7.357 | 6.718 | 6.576 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 534   | 491   | 540   | 487   | 536   | 548   |
| Service Time           | 4.773 | 5.06  | 4.397 | 5.106 | 4.466 | 4.625 |
| HCM Lane V/C Ratio     | 0.397 | 0.281 | 0.461 | 0.113 | 0.55  | 0.447 |
| HCM Control Delay      | 14.1  | 12.9  | 15    | 11    | 17.4  | 14.9  |
| HCM Lane LOS           | B     | B     | B     | B     | C     | B     |
| HCM 95th-tile Q        | 1.9   | 1.1   | 2.4   | 0.4   | 3.3   | 2.3   |



HCM 6th TWSC  
1: 12th Avenue & Glendale Avenue

11/02/2020

| Intersection             |       |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|-------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 117.3 |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL   | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |       |      | ↗    |      |      | ↗    |      | ↑↑↑  |      | ↗    | ↑↑↑  |      |
| Traffic Vol, veh/h       | 0     | 0    | 255  | 0    | 0    | 296  | 0    | 2631 | 110  | 69   | 2855 | 249  |
| Future Vol, veh/h        | 0     | 0    | 255  | 0    | 0    | 296  | 0    | 2631 | 110  | 69   | 2855 | 249  |
| Conflicting Peds, #/hr   | 0     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop  | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized           | -     | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -     | -    | 0    | -    | -    | 0    | -    | -    | -    | 125  | -    | -    |
| Veh in Median Storage, # | -     | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -     | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 92    | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 3     | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    |
| Mvmt Flow                | 0     | 0    | 277  | 0    | 0    | 322  | 0    | 2860 | 120  | 75   | 3103 | 271  |

| Major/Minor          | Minor2 |   | Minor1 |   | Major1 |      | Major2 |      |
|----------------------|--------|---|--------|---|--------|------|--------|------|
| Conflicting Flow All | -      | - | 1687   | - | -      | 1490 | -      | 0    |
| Stage 1              | -      | - | -      | - | -      | -    | -      | -    |
| Stage 2              | -      | - | -      | - | -      | -    | -      | -    |
| Critical Hdwy        | -      | - | 7.16   | - | -      | 7.16 | -      | 5.36 |
| Critical Hdwy Stg 1  | -      | - | -      | - | -      | -    | -      | -    |
| Critical Hdwy Stg 2  | -      | - | -      | - | -      | -    | -      | -    |
| Follow-up Hdwy       | -      | - | 3.93   | - | -      | 3.93 | -      | 3.13 |
| Pot Cap-1 Maneuver   | 0      | 0 | ~ 70   | 0 | 0      | ~ 96 | 0      | ~ 38 |
| Stage 1              | 0      | 0 | -      | 0 | 0      | -    | -      | -    |
| Stage 2              | 0      | 0 | -      | 0 | 0      | -    | -      | -    |
| Platoon blocked, %   | -      | - | -      | - | -      | -    | -      | -    |
| Mov Cap-1 Maneuver   | -      | - | ~ 70   | - | -      | ~ 96 | -      | ~ 38 |
| Mov Cap-2 Maneuver   | -      | - | -      | - | -      | -    | -      | -    |
| Stage 1              | -      | - | -      | - | -      | -    | -      | -    |
| Stage 2              | -      | - | -      | - | -      | -    | -      | -    |

| Approach              | EB     | WB     | NB | SB   |
|-----------------------|--------|--------|----|------|
| HCM Control Delay, \$ | 1453.8 | 1151.6 | 0  | 14.8 |
| HCM LOS               | F      | F      |    |      |

| Minor Lane/Major Mvmt | NBT | NBR | EBLn1     | WBLn1     | SBL      | SBT | SBR |
|-----------------------|-----|-----|-----------|-----------|----------|-----|-----|
| Capacity (veh/h)      | -   | -   | 70        | 96        | ~ 38     | -   | -   |
| HCM Lane V/C Ratio    | -   | -   | 3.96      | 3.351     | 1.974    | -   | -   |
| HCM Control Delay (s) | -   | -   | \$ 1453.8 | \$ 1151.6 | \$ 682.3 | -   | -   |
| HCM Lane LOS          | -   | -   | F         | F         | F        | -   | -   |
| HCM 95th %tile Q(veh) | -   | -   | 29.4      | 32        | 8.1      | -   | -   |

| Notes                      |                        |                            |                                |
|----------------------------|------------------------|----------------------------|--------------------------------|
| ~: Volume exceeds capacity | \$: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

HCM 6th TWSC  
6: Campus Dr & 6th Street

11/02/2020

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 4.8  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 19   | 12   | 0    | 0    | 6    | 107  | 0    | 146  | 0    | 94   | 79   | 22   |
| Future Vol, veh/h        | 19   | 12   | 0    | 0    | 6    | 107  | 0    | 146  | 0    | 94   | 79   | 22   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    |
| Mvmt Flow                | 21   | 13   | 0    | 0    | 7    | 116  | 0    | 159  | 0    | 102  | 86   | 24   |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       | Major2 |   |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|--------|---|---|-------|---|---|
| Conflicting Flow All | 523    | 461   | 98     | 468   | 473    | 159   | 110    | 0 | 0 | 159   | 0 | 0 |
| Stage 1              | 302    | 302   | -      | 159   | 159    | -     | -      | - | - | -     | - | - |
| Stage 2              | 221    | 159   | -      | 309   | 314    | -     | -      | - | - | -     | - | - |
| Critical Hdwy        | 7.13   | 6.53  | 6.23   | 7.13  | 6.53   | 6.23  | 4.13   | - | - | 4.13  | - | - |
| Critical Hdwy Stg 1  | 6.13   | 5.53  | -      | 6.13  | 5.53   | -     | -      | - | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.13   | 5.53  | -      | 6.13  | 5.53   | -     | -      | - | - | -     | - | - |
| Follow-up Hdwy       | 3.527  | 4.027 | 3.327  | 3.527 | 4.027  | 3.327 | 2.227  | - | - | 2.227 | - | - |
| Pot Cap-1 Maneuver   | 463    | 496   | 955    | 504   | 488    | 884   | 1474   | - | - | 1414  | - | - |
| Stage 1              | 705    | 662   | -      | 841   | 764    | -     | -      | - | - | -     | - | - |
| Stage 2              | 779    | 764   | -      | 699   | 654    | -     | -      | - | - | -     | - | - |
| Platoon blocked, %   |        |       |        |       |        |       |        | - | - | -     | - | - |
| Mov Cap-1 Maneuver   | 374    | 458   | 955    | 464   | 450    | 884   | 1474   | - | - | 1414  | - | - |
| Mov Cap-2 Maneuver   | 374    | 458   | -      | 464   | 450    | -     | -      | - | - | -     | - | - |
| Stage 1              | 705    | 611   | -      | 841   | 764    | -     | -      | - | - | -     | - | - |
| Stage 2              | 671    | 764   | -      | 631   | 604    | -     | -      | - | - | -     | - | - |

| Approach             | EB   | WB | NB | SB  |
|----------------------|------|----|----|-----|
| HCM Control Delay, s | 14.7 | 10 | 0  | 3.7 |
| HCM LOS              | B    | B  |    |     |

| Minor Lane/Major Mvmt | NBL  | NBT | NBR | EBLn1WBLn1  | SBL   | SBT | SBR |
|-----------------------|------|-----|-----|-------------|-------|-----|-----|
| Capacity (veh/h)      | 1474 | -   | -   | 403 841     | 1414  | -   | -   |
| HCM Lane V/C Ratio    | -    | -   | -   | 0.084 0.146 | 0.072 | -   | -   |
| HCM Control Delay (s) | 0    | -   | -   | 14.7 10     | 7.7   | 0   | -   |
| HCM Lane LOS          | A    | -   | -   | B B         | A A   | -   | -   |
| HCM 95th %tile Q(veh) | 0    | -   | -   | 0.3 0.5     | 0.2   | -   | -   |

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 7.6  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      |      | ↗    |      |      | ↗    | ↗    | ↗↘   |      | ↗    | ↗↘   |      |
| Traffic Vol, veh/h       | 0    | 0    | 105  | 0    | 0    | 249  | 152  | 1628 | 162  | 165  | 1705 | 12   |
| Future Vol, veh/h        | 0    | 0    | 105  | 0    | 0    | 249  | 152  | 1628 | 162  | 165  | 1705 | 12   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | 0    | -    | -    | 0    | 75   | -    | -    | 125  | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 97   | 97   | 97   | 97   | 97   | 97   | 97   | 97   | 97   | 97   | 97   | 97   |
| Heavy Vehicles, %        | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    |
| Mvmt Flow                | 0    | 0    | 108  | 0    | 0    | 257  | 157  | 1678 | 167  | 170  | 1758 | 12   |

| Major/Minor          | Minor2 |   | Minor1 |   | Major1 |      | Major2 |   |   |      |   |   |
|----------------------|--------|---|--------|---|--------|------|--------|---|---|------|---|---|
| Conflicting Flow All | -      | - | 885    | - | -      | 923  | 1770   | 0 | 0 | 1845 | 0 | 0 |
| Stage 1              | -      | - | -      | - | -      | -    | -      | - | - | -    | - | - |
| Stage 2              | -      | - | -      | - | -      | -    | -      | - | - | -    | - | - |
| Critical Hdwy        | -      | - | 6.96   | - | -      | 6.96 | 4.16   | - | - | 4.16 | - | - |
| Critical Hdwy Stg 1  | -      | - | -      | - | -      | -    | -      | - | - | -    | - | - |
| Critical Hdwy Stg 2  | -      | - | -      | - | -      | -    | -      | - | - | -    | - | - |
| Follow-up Hdwy       | -      | - | 3.33   | - | -      | 3.33 | 2.23   | - | - | 2.23 | - | - |
| Pot Cap-1 Maneuver   | 0      | 0 | 286    | 0 | 0      | 270  | 344    | - | - | 321  | - | - |
| Stage 1              | 0      | 0 | -      | 0 | 0      | -    | -      | - | - | -    | - | - |
| Stage 2              | 0      | 0 | -      | 0 | 0      | -    | -      | - | - | -    | - | - |
| Platoon blocked, %   | -      | - | -      | - | -      | -    | -      | - | - | -    | - | - |
| Mov Cap-1 Maneuver   | -      | - | 286    | - | -      | 270  | 344    | - | - | 321  | - | - |
| Mov Cap-2 Maneuver   | -      | - | -      | - | -      | -    | -      | - | - | -    | - | - |
| Stage 1              | -      | - | -      | - | -      | -    | -      | - | - | -    | - | - |
| Stage 2              | -      | - | -      | - | -      | -    | -      | - | - | -    | - | - |

| Approach             | EB   |  | WB   |  | NB  |  | SB  |  |
|----------------------|------|--|------|--|-----|--|-----|--|
| HCM Control Delay, s | 25.1 |  | 83.6 |  | 1.9 |  | 2.5 |  |
| HCM LOS              | D    |  | F    |  |     |  |     |  |

| Minor Lane/Major Mvmt | NBL   | NBT | NBR | EBLn1WBLn1 | SBL   | SBT  | SBR |
|-----------------------|-------|-----|-----|------------|-------|------|-----|
| Capacity (veh/h)      | 344   | -   | -   | 286        | 270   | 321  | -   |
| HCM Lane V/C Ratio    | 0.456 | -   | -   | 0.378      | 0.951 | 0.53 | -   |
| HCM Control Delay (s) | 23.9  | -   | -   | 25.1       | 83.6  | 28.2 | -   |
| HCM Lane LOS          | C     | -   | -   | D          | F     | D    | -   |
| HCM 95th %tile Q(veh) | 2.3   | -   | -   | 1.7        | 9     | 2.9  | -   |

# HCM 6th Signalized Intersection Summary

## 2: SR 198 WB Ramps & 12th Avenue

11/11/2020

|                              |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | WBL                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                                 | SBR                                                                                 | NEL                                                                                 | NER                                                                                 |
| Lane Configurations          |  |  |  |  |                                                                                   |                                                                                   |  |  |                                                                                     |                                                                                     |
| Traffic Volume (veh/h)       | 221                                                                               | 848                                                                               | 71                                                                                | 1899                                                                              | 0                                                                                 | 0                                                                                 | 2032                                                                                | 1088                                                                                | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 221                                                                               | 848                                                                               | 71                                                                                | 1899                                                                              | 0                                                                                 | 0                                                                                 | 2032                                                                                | 1088                                                                                | 0                                                                                   | 0                                                                                   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 0                                                                                 | 0                                                                                 | 1856                                                                                | 1856                                                                                |                                                                                     |                                                                                     |
| Adj Flow Rate, veh/h         | 240                                                                               | 922                                                                               | 77                                                                                | 2064                                                                              | 0                                                                                 | 0                                                                                 | 2209                                                                                | 1183                                                                                |                                                                                     |                                                                                     |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                |                                                                                     |                                                                                     |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 3                                                                                   | 3                                                                                   |                                                                                     |                                                                                     |
| Cap, veh/h                   | 434                                                                               | 773                                                                               | 81                                                                                | 2394                                                                              | 0                                                                                 | 0                                                                                 | 2101                                                                                | 937                                                                                 |                                                                                     |                                                                                     |
| Arrive On Green              | 0.25                                                                              | 0.25                                                                              | 0.05                                                                              | 0.68                                                                              | 0.00                                                                              | 0.00                                                                              | 0.60                                                                                | 0.60                                                                                |                                                                                     |                                                                                     |
| Sat Flow, veh/h              | 1767                                                                              | 3145                                                                              | 1767                                                                              | 3618                                                                              | 0                                                                                 | 0                                                                                 | 3618                                                                                | 1572                                                                                |                                                                                     |                                                                                     |
| Grp Volume(v), veh/h         | 240                                                                               | 922                                                                               | 77                                                                                | 2064                                                                              | 0                                                                                 | 0                                                                                 | 2209                                                                                | 1183                                                                                |                                                                                     |                                                                                     |
| Grp Sat Flow(s),veh/h/ln     | 1767                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 0                                                                                 | 0                                                                                 | 1763                                                                                | 1572                                                                                |                                                                                     |                                                                                     |
| Q Serve(g_s), s              | 14.2                                                                              | 29.5                                                                              | 5.2                                                                               | 54.4                                                                              | 0.0                                                                               | 0.0                                                                               | 71.5                                                                                | 71.5                                                                                |                                                                                     |                                                                                     |
| Cycle Q Clear(g_c), s        | 14.2                                                                              | 29.5                                                                              | 5.2                                                                               | 54.4                                                                              | 0.0                                                                               | 0.0                                                                               | 71.5                                                                                | 71.5                                                                                |                                                                                     |                                                                                     |
| Prop In Lane                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 0.00                                                                              |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |
| Lane Grp Cap(c), veh/h       | 434                                                                               | 773                                                                               | 81                                                                                | 2394                                                                              | 0                                                                                 | 0                                                                                 | 2101                                                                                | 937                                                                                 |                                                                                     |                                                                                     |
| V/C Ratio(X)                 | 0.55                                                                              | 1.19                                                                              | 0.95                                                                              | 0.86                                                                              | 0.00                                                                              | 0.00                                                                              | 1.05                                                                                | 1.26                                                                                |                                                                                     |                                                                                     |
| Avail Cap(c_a), veh/h        | 434                                                                               | 773                                                                               | 81                                                                                | 2394                                                                              | 0                                                                                 | 0                                                                                 | 2101                                                                                | 937                                                                                 |                                                                                     |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Uniform Delay (d), s/veh     | 39.5                                                                              | 45.3                                                                              | 57.1                                                                              | 14.9                                                                              | 0.0                                                                               | 0.0                                                                               | 24.2                                                                                | 24.2                                                                                |                                                                                     |                                                                                     |
| Incr Delay (d2), s/veh       | 1.5                                                                               | 99.2                                                                              | 83.2                                                                              | 4.4                                                                               | 0.0                                                                               | 0.0                                                                               | 34.9                                                                                | 126.8                                                                               |                                                                                     |                                                                                     |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |
| %ile BackOfQ(50%),veh/ln     | 6.2                                                                               | 21.7                                                                              | 4.2                                                                               | 19.8                                                                              | 0.0                                                                               | 0.0                                                                               | 36.5                                                                                | 56.5                                                                                |                                                                                     |                                                                                     |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 41.0                                                                              | 144.5                                                                             | 140.3                                                                             | 19.3                                                                              | 0.0                                                                               | 0.0                                                                               | 59.1                                                                                | 151.0                                                                               |                                                                                     |                                                                                     |
| LnGrp LOS                    | D                                                                                 | F                                                                                 | F                                                                                 | B                                                                                 | A                                                                                 | A                                                                                 | F                                                                                   | F                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          | 1162                                                                              |                                                                                   |                                                                                   | 2141                                                                              |                                                                                   |                                                                                   | 3392                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 123.1                                                                             |                                                                                   |                                                                                   | 23.6                                                                              |                                                                                   |                                                                                   | 91.2                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | F                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | F                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 2                                                                                 |                                                                                   | 5                                                                                 |                                                                                   | 6                                                                                 |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 86.0                                                                              |                                                                                   | 10.0                                                                              |                                                                                   | 76.0                                                                              |                                                                                   | 34.0                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 81.5                                                                              |                                                                                   | 5.5                                                                               |                                                                                   | 71.5                                                                              |                                                                                   | 29.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 56.4                                                                              |                                                                                   | 7.2                                                                               |                                                                                   | 73.5                                                                              |                                                                                   | 31.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 18.2                                                                              |                                                                                   | 0.0                                                                               |                                                                                   | 0.0                                                                               |                                                                                   | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 75.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | E                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary 3: 12th Avenue & SR 198 EB Off Ramps

11/11/2020

|                              |                                                                                    |  |  |  |  |  |  |                                                                                      |  |  |                                                                                      |  |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                                                                                                                 | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                                                                                                     | NBR                                                                                 | SBL                                                                                 | SBT                                                                                                                                                                     | SBR                                                                                 |
| Lane Configurations          |   |                                                                                   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                    |   |  |                                                                                     |   |  |
| Traffic Volume (veh/h)       | 922                                                                                                                                                                 | 0                                                                                 | 76                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 1033                                                                                                                                                                    | 221                                                                                 | 0                                                                                   | 1386                                                                                                                                                                    | 881                                                                                 |
| Future Volume (veh/h)        | 922                                                                                                                                                                 | 0                                                                                 | 76                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 1033                                                                                                                                                                    | 221                                                                                 | 0                                                                                   | 1386                                                                                                                                                                    | 881                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 0                                                                                                                                                                       | 0                                                                                   | 0                                                                                   | 0                                                                                                                                                                       | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                                                                                                                |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               |                                                                                                                                                                         | 1.00                                                                                | 1.00                                                                                |                                                                                                                                                                         | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                 |                                                                                                                                                                         |                                                                                     | No                                                                                  |                                                                                                                                                                         |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                                                                                                                | 0                                                                                 | 1856                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1856                                                                                                                                                                    | 1856                                                                                | 0                                                                                   | 1856                                                                                                                                                                    | 1856                                                                                |
| Adj Flow Rate, veh/h         | 991                                                                                                                                                                 | 0                                                                                 | 82                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1111                                                                                                                                                                    | 0                                                                                   | 0                                                                                   | 1490                                                                                                                                                                    | 0                                                                                   |
| Peak Hour Factor             | 0.93                                                                                                                                                                | 0.93                                                                              | 0.93                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.93                                                                               | 0.93                                                                                                                                                                    | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                                                                                                    | 0.93                                                                                |
| Percent Heavy Veh, %         | 3                                                                                                                                                                   | 0                                                                                 | 3                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 3                                                                                                                                                                       | 3                                                                                   | 0                                                                                   | 3                                                                                                                                                                       | 3                                                                                   |
| Cap, veh/h                   | 1122                                                                                                                                                                | 0                                                                                 | 515                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 2001                                                                                                                                                                    |                                                                                     | 0                                                                                   | 2001                                                                                                                                                                    |                                                                                     |
| Arrive On Green              | 0.33                                                                                                                                                                | 0.00                                                                              | 0.33                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.57                                                                                                                                                                    | 0.00                                                                                | 0.00                                                                                | 0.57                                                                                                                                                                    | 0.00                                                                                |
| Sat Flow, veh/h              | 3428                                                                                                                                                                | 0                                                                                 | 1572                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 3618                                                                                                                                                                    | 1572                                                                                | 0                                                                                   | 3618                                                                                                                                                                    | 1572                                                                                |
| Grp Volume(v), veh/h         | 991                                                                                                                                                                 | 0                                                                                 | 82                                                                                |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1111                                                                                                                                                                    | 0                                                                                   | 0                                                                                   | 1490                                                                                                                                                                    | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1714                                                                                                                                                                | 0                                                                                 | 1572                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1763                                                                                                                                                                    | 1572                                                                                | 0                                                                                   | 1763                                                                                                                                                                    | 1572                                                                                |
| Q Serve(g_s), s              | 23.4                                                                                                                                                                | 0.0                                                                               | 3.2                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 17.0                                                                                                                                                                    | 0.0                                                                                 | 0.0                                                                                 | 27.1                                                                                                                                                                    | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 23.4                                                                                                                                                                | 0.0                                                                               | 3.2                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 17.0                                                                                                                                                                    | 0.0                                                                                 | 0.0                                                                                 | 27.1                                                                                                                                                                    | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                                                                                                                |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               |                                                                                                                                                                         | 1.00                                                                                | 0.00                                                                                |                                                                                                                                                                         | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 1122                                                                                                                                                                | 0                                                                                 | 515                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 2001                                                                                                                                                                    |                                                                                     | 0                                                                                   | 2001                                                                                                                                                                    |                                                                                     |
| V/C Ratio(X)                 | 0.88                                                                                                                                                                | 0.00                                                                              | 0.16                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.56                                                                                                                                                                    |                                                                                     | 0.00                                                                                | 0.74                                                                                                                                                                    |                                                                                     |
| Avail Cap(c_a), veh/h        | 1304                                                                                                                                                                | 0                                                                                 | 598                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 2001                                                                                                                                                                    |                                                                                     | 0                                                                                   | 2001                                                                                                                                                                    |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                                                                                                                | 0.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 1.00                                                                                                                                                                    | 0.00                                                                                | 0.00                                                                                | 1.00                                                                                                                                                                    | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 27.2                                                                                                                                                                | 0.0                                                                               | 20.4                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 11.7                                                                                                                                                                    | 0.0                                                                                 | 0.0                                                                                 | 13.8                                                                                                                                                                    | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 6.7                                                                                                                                                                 | 0.0                                                                               | 0.1                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 1.1                                                                                                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 2.6                                                                                                                                                                     | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                                                                                                                 | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 0.0                                                                                                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                                                                                                     | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 9.7                                                                                                                                                                 | 0.0                                                                               | 1.1                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 5.9                                                                                                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 9.7                                                                                                                                                                     | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                                                                                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| LnGrp Delay(d),s/veh         | 33.9                                                                                                                                                                | 0.0                                                                               | 20.5                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 12.8                                                                                                                                                                    | 0.0                                                                                 | 0.0                                                                                 | 16.4                                                                                                                                                                    | 0.0                                                                                 |
| LnGrp LOS                    | C                                                                                                                                                                   | A                                                                                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | A                                                                                  | B                                                                                                                                                                       |                                                                                     | A                                                                                   | B                                                                                                                                                                       |                                                                                     |
| Approach Vol, veh/h          | 1073                                                                                                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 1111                                                                               |                                                                                                                                                                         |                                                                                     | A                                                                                   |                                                                                                                                                                         |                                                                                     |
| Approach Delay, s/veh        | 32.9                                                                                                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 12.8                                                                               |                                                                                                                                                                         |                                                                                     | 16.4                                                                                |                                                                                                                                                                         |                                                                                     |
| Approach LOS                 | C                                                                                                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | B                                                                                  |                                                                                                                                                                         |                                                                                     | B                                                                                   |                                                                                                                                                                         |                                                                                     |
| Timer - Assigned Phs         | 2                                                                                                                                                                   |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                  |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 53.0                                                                                                                                                                |                                                                                   |                                                                                   | 32.5                                                                              |                                                                                   |                                                                                   | 53.0                                                                               |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                                                                                                                 |                                                                                   |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                   | 4.5                                                                                |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Max Green Setting (Gmax), s  | 48.5                                                                                                                                                                |                                                                                   |                                                                                   | 32.5                                                                              |                                                                                   |                                                                                   | 48.5                                                                               |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 19.0                                                                                                                                                                |                                                                                   |                                                                                   | 25.4                                                                              |                                                                                   |                                                                                   | 29.1                                                                               |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Green Ext Time (p_c), s      | 8.9                                                                                                                                                                 |                                                                                   |                                                                                   | 2.6                                                                               |                                                                                   |                                                                                   | 10.7                                                                               |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Intersection Summary         |                                                                                                                                                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                                                                                                     |                                                                                   | 20.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| HCM 6th LOS                  |                                                                                                                                                                     |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Notes                        |                                                                                                                                                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 4: Campus Drive & Lacey Boulevard

11/11/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)       | 46                                                                                | 1144                                                                              | 77                                                                                | 106                                                                               | 1268                                                                              | 66                                                                                | 104                                                                                 | 105                                                                                 | 231                                                                                 | 155                                                                                 | 133                                                                                 | 53                                                                                  |
| Future Volume (veh/h)        | 46                                                                                | 1144                                                                              | 77                                                                                | 106                                                                               | 1268                                                                              | 66                                                                                | 104                                                                                 | 105                                                                                 | 231                                                                                 | 155                                                                                 | 133                                                                                 | 53                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 50                                                                                | 1243                                                                              | 84                                                                                | 115                                                                               | 1378                                                                              | 72                                                                                | 113                                                                                 | 114                                                                                 | 251                                                                                 | 168                                                                                 | 145                                                                                 | 58                                                                                  |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 69                                                                                | 1257                                                                              | 561                                                                               | 129                                                                               | 1375                                                                              | 613                                                                               | 134                                                                                 | 144                                                                                 | 316                                                                                 | 171                                                                                 | 555                                                                                 | 470                                                                                 |
| Arrive On Green              | 0.04                                                                              | 0.36                                                                              | 0.36                                                                              | 0.07                                                                              | 0.39                                                                              | 0.39                                                                              | 0.08                                                                                | 0.28                                                                                | 0.28                                                                                | 0.10                                                                                | 0.30                                                                                | 0.30                                                                                |
| Sat Flow, veh/h              | 1767                                                                              | 3526                                                                              | 1572                                                                              | 1767                                                                              | 3526                                                                              | 1572                                                                              | 1767                                                                                | 516                                                                                 | 1135                                                                                | 1767                                                                                | 1856                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 50                                                                                | 1243                                                                              | 84                                                                                | 115                                                                               | 1378                                                                              | 72                                                                                | 113                                                                                 | 0                                                                                   | 365                                                                                 | 168                                                                                 | 145                                                                                 | 58                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1767                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                                | 0                                                                                   | 1651                                                                                | 1767                                                                                | 1856                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 2.6                                                                               | 32.2                                                                              | 3.3                                                                               | 5.9                                                                               | 35.9                                                                              | 1.8                                                                               | 5.8                                                                                 | 0.0                                                                                 | 18.8                                                                                | 8.7                                                                                 | 5.5                                                                                 | 2.5                                                                                 |
| Cycle Q Clear(g_c), s        | 2.6                                                                               | 32.2                                                                              | 3.3                                                                               | 5.9                                                                               | 35.9                                                                              | 1.8                                                                               | 5.8                                                                                 | 0.0                                                                                 | 18.8                                                                                | 8.7                                                                                 | 5.5                                                                                 | 2.5                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 0.69                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 69                                                                                | 1257                                                                              | 561                                                                               | 129                                                                               | 1375                                                                              | 613                                                                               | 134                                                                                 | 0                                                                                   | 459                                                                                 | 171                                                                                 | 555                                                                                 | 470                                                                                 |
| V/C Ratio(X)                 | 0.72                                                                              | 0.99                                                                              | 0.15                                                                              | 0.89                                                                              | 1.00                                                                              | 0.12                                                                              | 0.84                                                                                | 0.00                                                                                | 0.79                                                                                | 0.98                                                                                | 0.26                                                                                | 0.12                                                                                |
| Avail Cap(c_a), veh/h        | 96                                                                                | 1257                                                                              | 561                                                                               | 129                                                                               | 1375                                                                              | 613                                                                               | 134                                                                                 | 0                                                                                   | 459                                                                                 | 171                                                                                 | 555                                                                                 | 470                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 43.7                                                                              | 29.4                                                                              | 20.1                                                                              | 42.3                                                                              | 28.1                                                                              | 8.3                                                                               | 41.9                                                                                | 0.0                                                                                 | 30.8                                                                                | 41.5                                                                                | 24.5                                                                                | 23.5                                                                                |
| Incr Delay (d2), s/veh       | 15.0                                                                              | 22.7                                                                              | 0.1                                                                               | 48.6                                                                              | 24.7                                                                              | 0.1                                                                               | 35.4                                                                                | 0.0                                                                                 | 13.2                                                                                | 63.5                                                                                | 1.1                                                                                 | 0.5                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.4                                                                               | 16.7                                                                              | 1.2                                                                               | 4.3                                                                               | 18.8                                                                              | 0.9                                                                               | 3.8                                                                                 | 0.0                                                                                 | 9.0                                                                                 | 6.8                                                                                 | 2.5                                                                                 | 1.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 58.7                                                                              | 52.1                                                                              | 20.2                                                                              | 90.9                                                                              | 52.8                                                                              | 8.4                                                                               | 77.4                                                                                | 0.0                                                                                 | 44.0                                                                                | 105.0                                                                               | 25.7                                                                                | 24.0                                                                                |
| LnGrp LOS                    | E                                                                                 | D                                                                                 | C                                                                                 | F                                                                                 | F                                                                                 | A                                                                                 | E                                                                                   | A                                                                                   | D                                                                                   | F                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 1377                                                                              |                                                                                   |                                                                                   | 1565                                                                              |                                                                                   |                                                                                   | 478                                                                                 |                                                                                     |                                                                                     | 371                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 50.4                                                                              |                                                                                   |                                                                                   | 53.5                                                                              |                                                                                   |                                                                                   | 51.9                                                                                |                                                                                     |                                                                                     | 61.3                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                   |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 13.4                                                                              | 30.1                                                                              | 11.2                                                                              | 37.3                                                                              | 11.5                                                                              | 32.0                                                                              | 8.1                                                                                 | 40.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 8.9                                                                               | 25.6                                                                              | 6.7                                                                               | 32.8                                                                              | 7.0                                                                               | 27.5                                                                              | 5.0                                                                                 | 34.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 10.7                                                                              | 20.8                                                                              | 7.9                                                                               | 34.2                                                                              | 7.8                                                                               | 7.5                                                                               | 4.6                                                                                 | 37.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 1.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.9                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 52.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 7: 11th Avenue & Lacey Boulevard

11/11/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |   |  |  |  |  |  |
| Traffic Volume (veh/h)       | 391                                                                               | 438                                                                               | 329                                                                               | 170                                                                               | 483                                                                               | 131                                                                               | 473                                                                                 | 1025                                                                                | 88                                                                                  | 142                                                                                 | 879                                                                                 | 162                                                                                 |
| Future Volume (veh/h)        | 391                                                                               | 438                                                                               | 329                                                                               | 170                                                                               | 483                                                                               | 131                                                                               | 473                                                                                 | 1025                                                                                | 88                                                                                  | 142                                                                                 | 879                                                                                 | 162                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 425                                                                               | 476                                                                               | 358                                                                               | 185                                                                               | 525                                                                               | 142                                                                               | 514                                                                                 | 1114                                                                                | 96                                                                                  | 154                                                                                 | 955                                                                                 | 176                                                                                 |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 464                                                                               | 847                                                                               | 378                                                                               | 217                                                                               | 626                                                                               | 169                                                                               | 567                                                                                 | 1159                                                                                | 100                                                                                 | 182                                                                                 | 1025                                                                                | 457                                                                                 |
| Arrive On Green              | 0.14                                                                              | 0.24                                                                              | 0.24                                                                              | 0.12                                                                              | 0.23                                                                              | 0.23                                                                              | 0.17                                                                                | 0.35                                                                                | 0.35                                                                                | 0.10                                                                                | 0.29                                                                                | 0.29                                                                                |
| Sat Flow, veh/h              | 3428                                                                              | 3526                                                                              | 1572                                                                              | 1767                                                                              | 2746                                                                              | 739                                                                               | 3428                                                                                | 3285                                                                                | 283                                                                                 | 1767                                                                                | 3526                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 425                                                                               | 476                                                                               | 358                                                                               | 185                                                                               | 336                                                                               | 331                                                                               | 514                                                                                 | 597                                                                                 | 613                                                                                 | 154                                                                                 | 955                                                                                 | 176                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1714                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 1722                                                                              | 1714                                                                                | 1763                                                                                | 1805                                                                                | 1767                                                                                | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 12.2                                                                              | 11.8                                                                              | 14.8                                                                              | 10.2                                                                              | 18.1                                                                              | 18.3                                                                              | 14.7                                                                                | 33.1                                                                                | 33.2                                                                                | 8.5                                                                                 | 26.3                                                                                | 8.9                                                                                 |
| Cycle Q Clear(g_c), s        | 12.2                                                                              | 11.8                                                                              | 14.8                                                                              | 10.2                                                                              | 18.1                                                                              | 18.3                                                                              | 14.7                                                                                | 33.1                                                                                | 33.2                                                                                | 8.5                                                                                 | 26.3                                                                                | 8.9                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.43                                                                              | 1.00                                                                                |                                                                                     | 0.16                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 464                                                                               | 847                                                                               | 378                                                                               | 217                                                                               | 402                                                                               | 393                                                                               | 567                                                                                 | 622                                                                                 | 637                                                                                 | 182                                                                                 | 1025                                                                                | 457                                                                                 |
| V/C Ratio(X)                 | 0.92                                                                              | 0.56                                                                              | 0.95                                                                              | 0.85                                                                              | 0.84                                                                              | 0.84                                                                              | 0.91                                                                                | 0.96                                                                                | 0.96                                                                                | 0.84                                                                                | 0.93                                                                                | 0.38                                                                                |
| Avail Cap(c_a), veh/h        | 464                                                                               | 944                                                                               | 421                                                                               | 262                                                                               | 495                                                                               | 484                                                                               | 567                                                                                 | 622                                                                                 | 637                                                                                 | 182                                                                                 | 1025                                                                                | 457                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 42.6                                                                              | 33.3                                                                              | 16.4                                                                              | 42.8                                                                              | 36.7                                                                              | 36.8                                                                              | 40.9                                                                                | 31.6                                                                                | 31.6                                                                                | 43.9                                                                                | 34.4                                                                                | 28.3                                                                                |
| Incr Delay (d2), s/veh       | 22.9                                                                              | 0.6                                                                               | 29.3                                                                              | 19.7                                                                              | 10.0                                                                              | 10.7                                                                              | 18.3                                                                                | 27.6                                                                                | 27.4                                                                                | 28.6                                                                                | 15.8                                                                                | 2.4                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 6.5                                                                               | 5.0                                                                               | 8.1                                                                               | 5.6                                                                               | 8.7                                                                               | 8.7                                                                               | 7.5                                                                                 | 18.2                                                                                | 18.6                                                                                | 5.1                                                                                 | 13.1                                                                                | 3.6                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 65.4                                                                              | 33.9                                                                              | 45.7                                                                              | 62.5                                                                              | 46.7                                                                              | 47.5                                                                              | 59.1                                                                                | 59.1                                                                                | 59.1                                                                                | 72.6                                                                                | 50.2                                                                                | 30.7                                                                                |
| LnGrp LOS                    | E                                                                                 | C                                                                                 | D                                                                                 | E                                                                                 | D                                                                                 | D                                                                                 | E                                                                                   | E                                                                                   | E                                                                                   | E                                                                                   | D                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 1259                                                                              |                                                                                   |                                                                                   |                                                                                   | 852                                                                               |                                                                                   |                                                                                     |                                                                                     | 1724                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 47.9                                                                              |                                                                                   |                                                                                   |                                                                                   | 50.5                                                                              |                                                                                   |                                                                                     |                                                                                     | 59.1                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | D                                                                                 |                                                                                   |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 14.8                                                                              | 39.7                                                                              | 16.8                                                                              | 28.5                                                                              | 21.0                                                                              | 33.5                                                                              | 18.0                                                                                | 27.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 10.3                                                                              | 35.2                                                                              | 14.8                                                                              | 26.7                                                                              | 16.5                                                                              | 29.0                                                                              | 13.5                                                                                | 28.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 10.5                                                                              | 35.2                                                                              | 12.2                                                                              | 16.8                                                                              | 16.7                                                                              | 28.3                                                                              | 14.2                                                                                | 20.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.0                                                                               | 0.1                                                                               | 3.2                                                                               | 0.0                                                                               | 0.5                                                                               | 0.0                                                                                 | 2.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 52.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# HCM 6th Signalized Intersection Summary 8: 11th Avenue & 7th Street

11/11/2020

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 104                                                                               | 296                                                                               | 339                                                                               | 252                                                                               | 263                                                                               | 169                                                                               | 258                                                                                 | 950                                                                                 | 178                                                                                 | 172                                                                                 | 879                                                                                 | 80                                                                                  |
| Future Volume (veh/h)        | 104                                                                               | 296                                                                               | 339                                                                               | 252                                                                               | 263                                                                               | 169                                                                               | 258                                                                                 | 950                                                                                 | 178                                                                                 | 172                                                                                 | 879                                                                                 | 80                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 113                                                                               | 322                                                                               | 368                                                                               | 274                                                                               | 286                                                                               | 184                                                                               | 280                                                                                 | 1033                                                                                | 193                                                                                 | 187                                                                                 | 955                                                                                 | 87                                                                                  |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 169                                                                               | 417                                                                               | 372                                                                               | 281                                                                               | 721                                                                               | 450                                                                               | 284                                                                                 | 1147                                                                                | 512                                                                                 | 204                                                                                 | 987                                                                                 | 440                                                                                 |
| Arrive On Green              | 0.05                                                                              | 0.24                                                                              | 0.24                                                                              | 0.16                                                                              | 0.35                                                                              | 0.35                                                                              | 0.16                                                                                | 0.33                                                                                | 0.33                                                                                | 0.12                                                                                | 0.28                                                                                | 0.28                                                                                |
| Sat Flow, veh/h              | 3428                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                              | 2082                                                                              | 1302                                                                              | 1767                                                                                | 3526                                                                                | 1572                                                                                | 1767                                                                                | 3526                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 113                                                                               | 322                                                                               | 368                                                                               | 274                                                                               | 241                                                                               | 229                                                                               | 280                                                                                 | 1033                                                                                | 193                                                                                 | 187                                                                                 | 955                                                                                 | 87                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1714                                                                              | 1763                                                                              | 1572                                                                              | 1767                                                                              | 1763                                                                              | 1621                                                                              | 1767                                                                                | 1763                                                                                | 1572                                                                                | 1767                                                                                | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 3.6                                                                               | 18.8                                                                              | 25.7                                                                              | 17.0                                                                              | 11.4                                                                              | 11.8                                                                              | 17.4                                                                                | 30.8                                                                                | 6.7                                                                                 | 11.5                                                                                | 29.4                                                                                | 4.6                                                                                 |
| Cycle Q Clear(g_c), s        | 3.6                                                                               | 18.8                                                                              | 25.7                                                                              | 17.0                                                                              | 11.4                                                                              | 11.8                                                                              | 17.4                                                                                | 30.8                                                                                | 6.7                                                                                 | 11.5                                                                                | 29.4                                                                                | 4.6                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.80                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 169                                                                               | 417                                                                               | 372                                                                               | 281                                                                               | 610                                                                               | 561                                                                               | 284                                                                                 | 1147                                                                                | 512                                                                                 | 204                                                                                 | 987                                                                                 | 440                                                                                 |
| V/C Ratio(X)                 | 0.67                                                                              | 0.77                                                                              | 0.99                                                                              | 0.97                                                                              | 0.39                                                                              | 0.41                                                                              | 0.98                                                                                | 0.90                                                                                | 0.38                                                                                | 0.92                                                                                | 0.97                                                                                | 0.20                                                                                |
| Avail Cap(c_a), veh/h        | 234                                                                               | 417                                                                               | 372                                                                               | 281                                                                               | 610                                                                               | 561                                                                               | 284                                                                                 | 1147                                                                                | 512                                                                                 | 204                                                                                 | 987                                                                                 | 440                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 51.4                                                                              | 39.2                                                                              | 41.9                                                                              | 46.0                                                                              | 27.2                                                                              | 27.4                                                                              | 46.0                                                                                | 35.4                                                                                | 11.8                                                                                | 48.1                                                                                | 39.1                                                                                | 30.2                                                                                |
| Incr Delay (d2), s/veh       | 4.5                                                                               | 8.7                                                                               | 43.9                                                                              | 46.5                                                                              | 0.4                                                                               | 0.5                                                                               | 49.0                                                                                | 11.3                                                                                | 2.1                                                                                 | 40.5                                                                                | 21.8                                                                                | 1.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.6                                                                               | 9.0                                                                               | 14.2                                                                              | 11.1                                                                              | 4.9                                                                               | 4.7                                                                               | 11.4                                                                                | 14.6                                                                                | 2.6                                                                                 | 7.3                                                                                 | 15.3                                                                                | 1.9                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 55.9                                                                              | 48.0                                                                              | 85.8                                                                              | 92.5                                                                              | 27.7                                                                              | 27.9                                                                              | 95.0                                                                                | 46.7                                                                                | 13.9                                                                                | 88.6                                                                                | 60.9                                                                                | 31.2                                                                                |
| LnGrp LOS                    | E                                                                                 | D                                                                                 | F                                                                                 | F                                                                                 | C                                                                                 | C                                                                                 | F                                                                                   | D                                                                                   | B                                                                                   | F                                                                                   | E                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 803                                                                               |                                                                                   |                                                                                   | 744                                                                               |                                                                                   |                                                                                   | 1506                                                                                |                                                                                     |                                                                                     | 1229                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 66.4                                                                              |                                                                                   |                                                                                   | 51.6                                                                              |                                                                                   |                                                                                   | 51.5                                                                                |                                                                                     |                                                                                     | 63.0                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | E                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                   |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 17.2                                                                              | 40.3                                                                              | 22.0                                                                              | 30.5                                                                              | 22.2                                                                              | 35.3                                                                              | 9.9                                                                                 | 42.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 12.7                                                                              | 35.8                                                                              | 17.5                                                                              | 26.0                                                                              | 17.7                                                                              | 30.8                                                                              | 7.5                                                                                 | 36.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 13.5                                                                              | 32.8                                                                              | 19.0                                                                              | 27.7                                                                              | 19.4                                                                              | 31.4                                                                              | 5.6                                                                                 | 13.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 2.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.1                                                                                 | 3.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 57.6                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | E                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 10: 11th Avenue & 5th Street

11/11/2020

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |                                                                                   |  |                                                                                   |  |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)       | 262                                                                               | 0                                                                                 | 211                                                                               | 15                                                                                | 0                                                                                 | 15                                                                                | 327                                                                                 | 1656                                                                                | 5                                                                                   | 12                                                                                  | 1566                                                                                | 215                                                                                 |
| Future Volume (veh/h)        | 262                                                                               | 0                                                                                 | 211                                                                               | 15                                                                                | 0                                                                                 | 15                                                                                | 327                                                                                 | 1656                                                                                | 5                                                                                   | 12                                                                                  | 1566                                                                                | 215                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 270                                                                               | 0                                                                                 | 218                                                                               | 15                                                                                | 0                                                                                 | 15                                                                                | 337                                                                                 | 1707                                                                                | 5                                                                                   | 12                                                                                  | 1614                                                                                | 222                                                                                 |
| Peak Hour Factor             | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 345                                                                               | 0                                                                                 | 372                                                                               | 125                                                                               | 15                                                                                | 91                                                                                | 339                                                                                 | 2261                                                                                | 7                                                                                   | 25                                                                                  | 1583                                                                                | 706                                                                                 |
| Arrive On Green              | 0.24                                                                              | 0.00                                                                              | 0.24                                                                              | 0.24                                                                              | 0.00                                                                              | 0.24                                                                              | 0.19                                                                                | 0.63                                                                                | 0.63                                                                                | 0.01                                                                                | 0.45                                                                                | 0.45                                                                                |
| Sat Flow, veh/h              | 1387                                                                              | 0                                                                                 | 1572                                                                              | 319                                                                               | 65                                                                                | 385                                                                               | 1767                                                                                | 3606                                                                                | 11                                                                                  | 1767                                                                                | 3526                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 270                                                                               | 0                                                                                 | 218                                                                               | 30                                                                                | 0                                                                                 | 0                                                                                 | 337                                                                                 | 834                                                                                 | 878                                                                                 | 12                                                                                  | 1614                                                                                | 222                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1387                                                                              | 0                                                                                 | 1572                                                                              | 770                                                                               | 0                                                                                 | 0                                                                                 | 1767                                                                                | 1763                                                                                | 1854                                                                                | 1767                                                                                | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 11.3                                                                              | 0.0                                                                               | 13.5                                                                              | 0.3                                                                               | 0.0                                                                               | 0.0                                                                               | 20.9                                                                                | 36.9                                                                                | 36.9                                                                                | 0.7                                                                                 | 49.4                                                                                | 10.0                                                                                |
| Cycle Q Clear(g_c), s        | 25.1                                                                              | 0.0                                                                               | 13.5                                                                              | 13.8                                                                              | 0.0                                                                               | 0.0                                                                               | 20.9                                                                                | 36.9                                                                                | 36.9                                                                                | 0.7                                                                                 | 49.4                                                                                | 10.0                                                                                |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 0.50                                                                              |                                                                                   | 0.50                                                                              | 1.00                                                                                |                                                                                     | 0.01                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 345                                                                               | 0                                                                                 | 372                                                                               | 231                                                                               | 0                                                                                 | 0                                                                                 | 339                                                                                 | 1105                                                                                | 1162                                                                                | 25                                                                                  | 1583                                                                                | 706                                                                                 |
| V/C Ratio(X)                 | 0.78                                                                              | 0.00                                                                              | 0.59                                                                              | 0.13                                                                              | 0.00                                                                              | 0.00                                                                              | 0.99                                                                                | 0.75                                                                                | 0.76                                                                                | 0.49                                                                                | 1.02                                                                                | 0.31                                                                                |
| Avail Cap(c_a), veh/h        | 345                                                                               | 0                                                                                 | 372                                                                               | 231                                                                               | 0                                                                                 | 0                                                                                 | 339                                                                                 | 1105                                                                                | 1162                                                                                | 80                                                                                  | 1583                                                                                | 706                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 42.7                                                                              | 0.0                                                                               | 37.2                                                                              | 33.3                                                                              | 0.0                                                                               | 0.0                                                                               | 44.4                                                                                | 14.5                                                                                | 14.5                                                                                | 53.8                                                                                | 30.3                                                                                | 19.4                                                                                |
| Incr Delay (d2), s/veh       | 11.2                                                                              | 0.0                                                                               | 2.4                                                                               | 0.3                                                                               | 0.0                                                                               | 0.0                                                                               | 47.2                                                                                | 4.8                                                                                 | 4.6                                                                                 | 14.1                                                                                | 27.6                                                                                | 1.2                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 8.3                                                                               | 0.0                                                                               | 5.4                                                                               | 0.6                                                                               | 0.0                                                                               | 0.0                                                                               | 13.5                                                                                | 15.0                                                                                | 15.7                                                                                | 0.4                                                                                 | 26.1                                                                                | 3.8                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 53.9                                                                              | 0.0                                                                               | 39.6                                                                              | 33.5                                                                              | 0.0                                                                               | 0.0                                                                               | 91.6                                                                                | 19.3                                                                                | 19.1                                                                                | 67.9                                                                                | 57.9                                                                                | 20.6                                                                                |
| LnGrp LOS                    | D                                                                                 | A                                                                                 | D                                                                                 | C                                                                                 | A                                                                                 | A                                                                                 | F                                                                                   | B                                                                                   | B                                                                                   | E                                                                                   | F                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 488                                                                               |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 2049                                                                                |                                                                                     |                                                                                     | 1848                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 47.5                                                                              |                                                                                   |                                                                                   | 33.5                                                                              |                                                                                   |                                                                                   | 31.1                                                                                |                                                                                     |                                                                                     | 53.5                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | D                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 4                                                                                 |                                                                                   | 5                                                                                 | 6                                                                                 | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 6.0                                                                               | 73.5                                                                              | 30.5                                                                              |                                                                                   | 25.6                                                                              | 53.9                                                                              | 30.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 5.0                                                                               | 65.5                                                                              | 26.0                                                                              |                                                                                   | 21.1                                                                              | 49.4                                                                              | 26.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 2.7                                                                               | 38.9                                                                              | 27.1                                                                              |                                                                                   | 22.9                                                                              | 51.4                                                                              | 15.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 15.6                                                                              | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 42.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

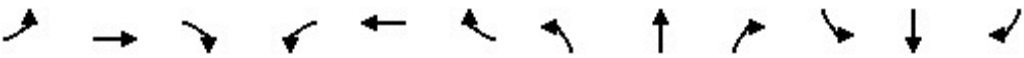
## 11: 11th Avenue & SR 198 WB On Ramp/4th Street

11/11/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |                                                                                   |                                                                                   |  |  |  |  |  |                                                                                     |                                                                                     |  |  |
| Traffic Volume (veh/h)       | 0                                                                                 | 0                                                                                 | 0                                                                                 | 337                                                                               | 54                                                                                | 368                                                                               | 141                                                                                | 1608                                                                                | 0                                                                                   | 0                                                                                   | 1496                                                                                | 428                                                                                 |
| Future Volume (veh/h)        | 0                                                                                 | 0                                                                                 | 0                                                                                 | 337                                                                               | 54                                                                                | 368                                                                               | 141                                                                                | 1608                                                                                | 0                                                                                   | 0                                                                                   | 1496                                                                                | 428                                                                                 |
| Initial Q (Qb), veh          |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                 |                                                                                     |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       |                                                                                   |                                                                                   |                                                                                   | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                               | 1856                                                                                | 0                                                                                   | 0                                                                                   | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         |                                                                                   |                                                                                   |                                                                                   | 355                                                                               | 57                                                                                | 387                                                                               | 148                                                                                | 1693                                                                                | 0                                                                                   | 0                                                                                   | 1575                                                                                | 451                                                                                 |
| Peak Hour Factor             |                                                                                   |                                                                                   |                                                                                   | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                               | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         |                                                                                   |                                                                                   |                                                                                   | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                  | 3                                                                                   | 0                                                                                   | 0                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   |                                                                                   |                                                                                   |                                                                                   | 498                                                                               | 523                                                                               | 443                                                                               | 165                                                                                | 2153                                                                                | 0                                                                                   | 0                                                                                   | 1634                                                                                | 729                                                                                 |
| Arrive On Green              |                                                                                   |                                                                                   |                                                                                   | 0.28                                                                              | 0.28                                                                              | 0.28                                                                              | 0.09                                                                               | 0.61                                                                                | 0.00                                                                                | 0.00                                                                                | 0.46                                                                                | 0.46                                                                                |
| Sat Flow, veh/h              |                                                                                   |                                                                                   |                                                                                   | 1767                                                                              | 1856                                                                              | 1572                                                                              | 1767                                                                               | 3618                                                                                | 0                                                                                   | 0                                                                                   | 3618                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         |                                                                                   |                                                                                   |                                                                                   | 355                                                                               | 57                                                                                | 387                                                                               | 148                                                                                | 1693                                                                                | 0                                                                                   | 0                                                                                   | 1575                                                                                | 451                                                                                 |
| Grp Sat Flow(s),veh/h/ln     |                                                                                   |                                                                                   |                                                                                   | 1767                                                                              | 1856                                                                              | 1572                                                                              | 1767                                                                               | 1763                                                                                | 0                                                                                   | 0                                                                                   | 1763                                                                                | 1572                                                                                |
| Q Serve(g_s), s              |                                                                                   |                                                                                   |                                                                                   | 15.1                                                                              | 1.9                                                                               | 19.6                                                                              | 6.9                                                                                | 30.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 36.2                                                                                | 18.0                                                                                |
| Cycle Q Clear(g_c), s        |                                                                                   |                                                                                   |                                                                                   | 15.1                                                                              | 1.9                                                                               | 19.6                                                                              | 6.9                                                                                | 30.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 36.2                                                                                | 18.0                                                                                |
| Prop In Lane                 |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.00                                                                                | 0.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       |                                                                                   |                                                                                   |                                                                                   | 498                                                                               | 523                                                                               | 443                                                                               | 165                                                                                | 2153                                                                                | 0                                                                                   | 0                                                                                   | 1634                                                                                | 729                                                                                 |
| V/C Ratio(X)                 |                                                                                   |                                                                                   |                                                                                   | 0.71                                                                              | 0.11                                                                              | 0.87                                                                              | 0.90                                                                               | 0.79                                                                                | 0.00                                                                                | 0.00                                                                                | 0.96                                                                                | 0.62                                                                                |
| Avail Cap(c_a), veh/h        |                                                                                   |                                                                                   |                                                                                   | 635                                                                               | 666                                                                               | 565                                                                               | 165                                                                                | 2153                                                                                | 0                                                                                   | 0                                                                                   | 1634                                                                                | 729                                                                                 |
| HCM Platoon Ratio            |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     |                                                                                   |                                                                                   |                                                                                   | 27.0                                                                              | 22.2                                                                              | 28.6                                                                              | 37.5                                                                               | 12.2                                                                                | 0.0                                                                                 | 0.0                                                                                 | 21.7                                                                                | 16.9                                                                                |
| Incr Delay (d2), s/veh       |                                                                                   |                                                                                   |                                                                                   | 2.7                                                                               | 0.1                                                                               | 11.8                                                                              | 41.8                                                                               | 3.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 15.2                                                                                | 3.9                                                                                 |
| Initial Q Delay(d3),s/veh    |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     |                                                                                   |                                                                                   |                                                                                   | 6.2                                                                               | 0.8                                                                               | 8.2                                                                               | 4.8                                                                                | 10.9                                                                                | 0.0                                                                                 | 0.0                                                                                 | 16.8                                                                                | 6.7                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         |                                                                                   |                                                                                   |                                                                                   | 29.7                                                                              | 22.3                                                                              | 40.4                                                                              | 79.3                                                                               | 15.2                                                                                | 0.0                                                                                 | 0.0                                                                                 | 37.0                                                                                | 20.8                                                                                |
| LnGrp LOS                    |                                                                                   |                                                                                   |                                                                                   | C                                                                                 | C                                                                                 | D                                                                                 | E                                                                                  | B                                                                                   | A                                                                                   | A                                                                                   | D                                                                                   | C                                                                                   |
| Approach Vol, veh/h          |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 799                                                                               |                                                                                   |                                                                                    | 1841                                                                                |                                                                                     |                                                                                     | 2026                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 34.3                                                                              |                                                                                   |                                                                                    | 20.3                                                                                |                                                                                     |                                                                                     | 33.4                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer - Assigned Phs         |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 55.5                                                                              |                                                                                   |                                                                                   | 12.3                                                                              | 43.2                                                                              |                                                                                    | 28.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                   | 4.5                                                                               | 4.5                                                                               |                                                                                    | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 51.0                                                                              |                                                                                   |                                                                                   | 7.8                                                                               | 38.7                                                                              |                                                                                    | 30.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s |                                                                                   | 32.0                                                                              |                                                                                   |                                                                                   | 8.9                                                                               | 38.2                                                                              |                                                                                    | 21.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 12.8                                                                              |                                                                                   |                                                                                   | 0.0                                                                               | 0.5                                                                               |                                                                                    | 1.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   |                                                                                   | 28.4                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary 12: 11th Avenue & SR 198 EB Off Ramp/3rd Street

11/11/2020

|                              |  |       |      |      |     |      |      |       |      |       |      |      |
|------------------------------|------------------------------------------------------------------------------------|-------|------|------|-----|------|------|-------|------|-------|------|------|
| Movement                     | EBL                                                                                | EBT   | EBR  | WBL  | WBT | WBR  | NBL  | NBT   | NBR  | SBL   | SBT  | SBR  |
| Lane Configurations          |                                                                                    | ↩     | ↪    |      |     |      |      | ↕     | ↕    | ↩     | ↕    | ↕    |
| Traffic Volume (veh/h)       | 570                                                                                | 122   | 116  | 0    | 0   | 0    | 0    | 1180  | 314  | 556   | 1284 | 0    |
| Future Volume (veh/h)        | 570                                                                                | 122   | 116  | 0    | 0   | 0    | 0    | 1180  | 314  | 556   | 1284 | 0    |
| Initial Q (Qb), veh          | 0                                                                                  | 0     | 0    |      |     |      | 0    | 0     | 0    | 0     | 0    | 0    |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                               |       | 1.00 |      |     |      | 1.00 |       | 1.00 | 1.00  |      | 1.00 |
| Parking Bus, Adj             | 1.00                                                                               | 1.00  | 1.00 |      |     |      | 1.00 | 1.00  | 1.00 | 1.00  | 1.00 | 1.00 |
| Work Zone On Approach        |                                                                                    | No    |      |      |     |      |      | No    |      |       | No   |      |
| Adj Sat Flow, veh/h/ln       | 1856                                                                               | 1856  | 1856 |      |     |      | 0    | 1856  | 1856 | 1856  | 1856 | 0    |
| Adj Flow Rate, veh/h         | 594                                                                                | 127   | 121  |      |     |      | 0    | 1229  | 327  | 579   | 1338 | 0    |
| Peak Hour Factor             | 0.96                                                                               | 0.96  | 0.96 |      |     |      | 0.96 | 0.96  | 0.96 | 0.96  | 0.96 | 0.96 |
| Percent Heavy Veh, %         | 3                                                                                  | 3     | 3    |      |     |      | 0    | 3     | 3    | 3     | 3    | 0    |
| Cap, veh/h                   | 496                                                                                | 106   | 531  |      |     |      | 0    | 1043  | 465  | 449   | 2071 | 0    |
| Arrive On Green              | 0.34                                                                               | 0.34  | 0.34 |      |     |      | 0.00 | 0.30  | 0.30 | 0.25  | 0.59 | 0.00 |
| Sat Flow, veh/h              | 1468                                                                               | 314   | 1572 |      |     |      | 0    | 3618  | 1572 | 1767  | 3618 | 0    |
| Grp Volume(v), veh/h         | 721                                                                                | 0     | 121  |      |     |      | 0    | 1229  | 327  | 579   | 1338 | 0    |
| Grp Sat Flow(s),veh/h/ln     | 1782                                                                               | 0     | 1572 |      |     |      | 0    | 1763  | 1572 | 1767  | 1763 | 0    |
| Q Serve(g_s), s              | 40.5                                                                               | 0.0   | 6.6  |      |     |      | 0.0  | 35.5  | 22.2 | 30.5  | 30.3 | 0.0  |
| Cycle Q Clear(g_c), s        | 40.5                                                                               | 0.0   | 6.6  |      |     |      | 0.0  | 35.5  | 22.2 | 30.5  | 30.3 | 0.0  |
| Prop In Lane                 | 0.82                                                                               |       | 1.00 |      |     |      | 0.00 |       | 1.00 | 1.00  |      | 0.00 |
| Lane Grp Cap(c), veh/h       | 601                                                                                | 0     | 531  |      |     |      | 0    | 1043  | 465  | 449   | 2071 | 0    |
| V/C Ratio(X)                 | 1.20                                                                               | 0.00  | 0.23 |      |     |      | 0.00 | 1.18  | 0.70 | 1.29  | 0.65 | 0.00 |
| Avail Cap(c_a), veh/h        | 601                                                                                | 0     | 531  |      |     |      | 0    | 1043  | 465  | 449   | 2071 | 0    |
| HCM Platoon Ratio            | 1.00                                                                               | 1.00  | 1.00 |      |     |      | 1.00 | 1.00  | 1.00 | 1.00  | 1.00 | 1.00 |
| Upstream Filter(I)           | 1.00                                                                               | 0.00  | 1.00 |      |     |      | 0.00 | 1.00  | 1.00 | 1.00  | 1.00 | 0.00 |
| Uniform Delay (d), s/veh     | 39.8                                                                               | 0.0   | 28.5 |      |     |      | 0.0  | 42.3  | 37.6 | 44.7  | 16.5 | 0.0  |
| Incr Delay (d2), s/veh       | 104.8                                                                              | 0.0   | 0.2  |      |     |      | 0.0  | 90.4  | 8.6  | 146.0 | 1.6  | 0.0  |
| Initial Q Delay(d3),s/veh    | 0.0                                                                                | 0.0   | 0.0  |      |     |      | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  | 0.0  |
| %ile BackOfQ(50%),veh/ln     | 34.3                                                                               | 0.0   | 2.5  |      |     |      | 0.0  | 28.0  | 9.4  | 31.4  | 12.2 | 0.0  |
| Unsig. Movement Delay, s/veh |                                                                                    |       |      |      |     |      |      |       |      |       |      |      |
| LnGrp Delay(d),s/veh         | 144.6                                                                              | 0.0   | 28.7 |      |     |      | 0.0  | 132.6 | 46.2 | 190.8 | 18.0 | 0.0  |
| LnGrp LOS                    | F                                                                                  | A     | C    |      |     |      | A    | F     | D    | F     | B    | A    |
| Approach Vol, veh/h          |                                                                                    | 842   |      |      |     |      |      | 1556  |      |       | 1917 |      |
| Approach Delay, s/veh        |                                                                                    | 127.9 |      |      |     |      |      | 114.5 |      |       | 70.2 |      |
| Approach LOS                 |                                                                                    | F     |      |      |     |      |      | F     |      |       | E    |      |
| Timer - Assigned Phs         | 1                                                                                  | 2     |      | 4    |     | 6    |      |       |      |       |      |      |
| Phs Duration (G+Y+Rc), s     | 35.0                                                                               | 40.0  |      | 45.0 |     | 75.0 |      |       |      |       |      |      |
| Change Period (Y+Rc), s      | 4.5                                                                                | 4.5   |      | 4.5  |     | 4.5  |      |       |      |       |      |      |
| Max Green Setting (Gmax), s  | 30.5                                                                               | 35.5  |      | 40.5 |     | 70.5 |      |       |      |       |      |      |
| Max Q Clear Time (g_c+I1), s | 32.5                                                                               | 37.5  |      | 42.5 |     | 32.3 |      |       |      |       |      |      |
| Green Ext Time (p_c), s      | 0.0                                                                                | 0.0   |      | 0.0  |     | 13.8 |      |       |      |       |      |      |
| <b>Intersection Summary</b>  |                                                                                    |       |      |      |     |      |      |       |      |       |      |      |
| HCM 6th Ctrl Delay           |                                                                                    |       | 97.4 |      |     |      |      |       |      |       |      |      |
| HCM 6th LOS                  |                                                                                    |       | F    |      |     |      |      |       |      |       |      |      |

HCM 6th AWSC  
5: Campus Dr/Campus Drive & 7th Street

11/02/2020

| Intersection              |       |
|---------------------------|-------|
| Intersection Delay, s/veh | 146.9 |
| Intersection LOS          | F     |

| Movement            | EBL                                                                               | EBT                                                                               | EBR  | WBL                                                                               | WBT                                                                               | WBR  | NBL  | NBT                                                                                 | NBR  | SBL  | SBT                                                                                 | SBR  |
|---------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|
| Lane Configurations |  |  |      |  |  |      |      |  |      |      |  |      |
| Traffic Vol, veh/h  | 108                                                                               | 410                                                                               | 53   | 27                                                                                | 521                                                                               | 62   | 83   | 169                                                                                 | 30   | 136  | 97                                                                                  | 135  |
| Future Vol, veh/h   | 108                                                                               | 410                                                                               | 53   | 27                                                                                | 521                                                                               | 62   | 83   | 169                                                                                 | 30   | 136  | 97                                                                                  | 135  |
| Peak Hour Factor    | 0.96                                                                              | 0.96                                                                              | 0.96 | 0.96                                                                              | 0.96                                                                              | 0.96 | 0.96 | 0.96                                                                                | 0.96 | 0.96 | 0.96                                                                                | 0.96 |
| Heavy Vehicles, %   | 3                                                                                 | 3                                                                                 | 3    | 3                                                                                 | 3                                                                                 | 3    | 3    | 3                                                                                   | 3    | 3    | 3                                                                                   | 3    |
| Mvmt Flow           | 113                                                                               | 427                                                                               | 55   | 28                                                                                | 543                                                                               | 65   | 86   | 176                                                                                 | 31   | 142  | 101                                                                                 | 141  |
| Number of Lanes     | 1                                                                                 | 1                                                                                 | 0    | 1                                                                                 | 1                                                                                 | 0    | 0    | 1                                                                                   | 0    | 0    | 1                                                                                   | 0    |

| Approach                   | EB    | WB    | NB | SB   |
|----------------------------|-------|-------|----|------|
| Opposing Approach          | WB    | EB    | SB | NB   |
| Opposing Lanes             | 2     | 2     | 1  | 1    |
| Conflicting Approach Left  | SB    | NB    | EB | WB   |
| Conflicting Lanes Left     | 1     | 1     | 2  | 2    |
| Conflicting Approach Right | NB    | SB    | WB | EB   |
| Conflicting Lanes Right    | 1     | 1     | 2  | 2    |
| HCM Control Delay          | 123.6 | 263.1 | 44 | 69.1 |
| HCM LOS                    | F     | F     | E  | F    |

| Lane                   | NBLn1 | EBLn1 | EBLn2  | WBLn1  | WBLn2 | SBLn1 |
|------------------------|-------|-------|--------|--------|-------|-------|
| Vol Left, %            | 29%   | 100%  | 0%     | 100%   | 0%    | 37%   |
| Vol Thru, %            | 60%   | 0%    | 89%    | 0%     | 89%   | 26%   |
| Vol Right, %           | 11%   | 0%    | 11%    | 0%     | 11%   | 37%   |
| Sign Control           | Stop  | Stop  | Stop   | Stop   | Stop  | Stop  |
| Traffic Vol by Lane    | 282   | 108   | 463    | 27     | 583   | 368   |
| LT Vol                 | 83    | 108   | 0      | 27     | 0     | 136   |
| Through Vol            | 169   | 0     | 410    | 0      | 521   | 97    |
| RT Vol                 | 30    | 0     | 53     | 0      | 62    | 135   |
| Lane Flow Rate         | 294   | 112   | 482    | 28     | 607   | 383   |
| Geometry Grp           | 2     | 7     | 7      | 7      | 7     | 2     |
| Degree of Util (X)     | 0.77  | 0.3   | 1.209  | 0.075  | 1.527 | 0.943 |
| Departure Headway (Hd) | 11.38 | 10.86 | 10.246 | 10.213 | 9.609 | 10.6  |
| Convergence, Y/N       | Yes   | Yes   | Yes    | Yes    | Yes   | Yes   |
| Cap                    | 320   | 333   | 357    | 353    | 383   | 345   |
| Service Time           | 9.38  | 8.56  | 7.946  | 7.913  | 7.309 | 8.6   |
| HCM Lane V/C Ratio     | 0.919 | 0.336 | 1.35   | 0.079  | 1.585 | 1.11  |
| HCM Control Delay      | 44    | 18.1  | 148.2  | 13.7   | 274.6 | 69.1  |
| HCM Lane LOS           | E     | C     | F      | B      | F     | F     |
| HCM 95th-tile Q        | 6     | 1.2   | 18     | 0.2    | 31.5  | 9.8   |

# TRANSPORTATION IMPROVEMENT WORKSHEETS

# HCM 6th Signalized Intersection Summary 5: Campus Dr/Campus Drive & 7th Street

11/11/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |                                                                                     |  |                                                                                     |                                                                                     |  |  |
| Traffic Volume (veh/h)       | 127                                                                               | 181                                                                               | 48                                                                                | 51                                                                                | 223                                                                               | 48                                                                                | 43                                                                                  | 122                                                                                 | 30                                                                                  | 34                                                                                  | 140                                                                                 | 51                                                                                  |
| Future Volume (veh/h)        | 127                                                                               | 181                                                                               | 48                                                                                | 51                                                                                | 223                                                                               | 48                                                                                | 43                                                                                  | 122                                                                                 | 30                                                                                  | 34                                                                                  | 140                                                                                 | 51                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 138                                                                               | 197                                                                               | 52                                                                                | 55                                                                                | 242                                                                               | 52                                                                                | 47                                                                                  | 133                                                                                 | 33                                                                                  | 37                                                                                  | 152                                                                                 | 55                                                                                  |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 192                                                                               | 429                                                                               | 113                                                                               | 106                                                                               | 377                                                                               | 81                                                                                | 189                                                                                 | 276                                                                                 | 61                                                                                  | 161                                                                                 | 268                                                                                 | 88                                                                                  |
| Arrive On Green              | 0.11                                                                              | 0.30                                                                              | 0.30                                                                              | 0.06                                                                              | 0.25                                                                              | 0.25                                                                              | 0.23                                                                                | 0.23                                                                                | 0.23                                                                                | 0.23                                                                                | 0.23                                                                                | 0.23                                                                                |
| Sat Flow, veh/h              | 1767                                                                              | 1415                                                                              | 373                                                                               | 1767                                                                              | 1480                                                                              | 318                                                                               | 245                                                                                 | 1207                                                                                | 266                                                                                 | 157                                                                                 | 1172                                                                                | 387                                                                                 |
| Grp Volume(v), veh/h         | 138                                                                               | 0                                                                                 | 249                                                                               | 55                                                                                | 0                                                                                 | 294                                                                               | 213                                                                                 | 0                                                                                   | 0                                                                                   | 244                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1767                                                                              | 0                                                                                 | 1788                                                                              | 1767                                                                              | 0                                                                                 | 1798                                                                              | 1718                                                                                | 0                                                                                   | 0                                                                                   | 1716                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 2.5                                                                               | 0.0                                                                               | 3.7                                                                               | 1.0                                                                               | 0.0                                                                               | 4.8                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.7                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 2.5                                                                               | 0.0                                                                               | 3.7                                                                               | 1.0                                                                               | 0.0                                                                               | 4.8                                                                               | 3.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 4.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.21                                                                              | 1.00                                                                              |                                                                                   | 0.18                                                                              | 0.22                                                                                |                                                                                     | 0.15                                                                                | 0.15                                                                                |                                                                                     | 0.23                                                                                |
| Lane Grp Cap(c), veh/h       | 192                                                                               | 0                                                                                 | 543                                                                               | 106                                                                               | 0                                                                                 | 458                                                                               | 525                                                                                 | 0                                                                                   | 0                                                                                   | 518                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.72                                                                              | 0.00                                                                              | 0.46                                                                              | 0.52                                                                              | 0.00                                                                              | 0.64                                                                              | 0.41                                                                                | 0.00                                                                                | 0.00                                                                                | 0.47                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 935                                                                               | 0                                                                                 | 1973                                                                              | 508                                                                               | 0                                                                                 | 1549                                                                              | 1636                                                                                | 0                                                                                   | 0                                                                                   | 1665                                                                                | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 14.3                                                                              | 0.0                                                                               | 9.3                                                                               | 15.1                                                                              | 0.0                                                                               | 11.0                                                                              | 11.2                                                                                | 0.0                                                                                 | 0.0                                                                                 | 11.4                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 5.0                                                                               | 0.0                                                                               | 0.6                                                                               | 3.9                                                                               | 0.0                                                                               | 1.5                                                                               | 0.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.7                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.0                                                                               | 0.0                                                                               | 1.0                                                                               | 0.4                                                                               | 0.0                                                                               | 1.5                                                                               | 1.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 1.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 19.2                                                                              | 0.0                                                                               | 9.9                                                                               | 19.0                                                                              | 0.0                                                                               | 12.5                                                                              | 11.7                                                                                | 0.0                                                                                 | 0.0                                                                                 | 12.1                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | B                                                                                 | A                                                                                 | A                                                                                 | B                                                                                 | A                                                                                 | B                                                                                 | B                                                                                   | A                                                                                   | A                                                                                   | B                                                                                   | A                                                                                   | A                                                                                   |
| Approach Vol, veh/h          | 387                                                                               |                                                                                   |                                                                                   | 349                                                                               |                                                                                   |                                                                                   | 213                                                                                 |                                                                                     |                                                                                     | 244                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 13.2                                                                              |                                                                                   |                                                                                   | 13.5                                                                              |                                                                                   |                                                                                   | 11.7                                                                                |                                                                                     |                                                                                     | 12.1                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 2                                                                                 |                                                                                   | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 12.1                                                                              |                                                                                   | 6.5                                                                               | 14.5                                                                              |                                                                                   | 12.1                                                                              | 8.1                                                                                 | 12.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                                 | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 30.5                                                                              |                                                                                   | 9.5                                                                               | 36.5                                                                              |                                                                                   | 30.5                                                                              | 17.5                                                                                | 28.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 5.4                                                                               |                                                                                   | 3.0                                                                               | 5.7                                                                               |                                                                                   | 6.1                                                                               | 4.5                                                                                 | 6.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 1.3                                                                               |                                                                                   | 0.0                                                                               | 1.5                                                                               |                                                                                   | 1.5                                                                               | 0.3                                                                                 | 1.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 12.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# HCM 6th Signalized Intersection Summary

## 5: Campus Dr/Campus Drive & 7th Street

11/11/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |  |
| Traffic Volume (veh/h)       | 108                                                                               | 410                                                                               | 53                                                                                | 27                                                                                | 521                                                                               | 62                                                                                | 83                                                                                 | 169                                                                                 | 30                                                                                  | 136                                                                                 | 97                                                                                  | 135                                                                                 |
| Future Volume (veh/h)        | 108                                                                               | 410                                                                               | 53                                                                                | 27                                                                                | 521                                                                               | 62                                                                                | 83                                                                                 | 169                                                                                 | 30                                                                                  | 136                                                                                 | 97                                                                                  | 135                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                 |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                               | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 112                                                                               | 427                                                                               | 55                                                                                | 28                                                                                | 543                                                                               | 65                                                                                | 86                                                                                 | 176                                                                                 | 31                                                                                  | 142                                                                                 | 101                                                                                 | 141                                                                                 |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                               | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                  | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 144                                                                               | 712                                                                               | 92                                                                                | 55                                                                                | 637                                                                               | 76                                                                                | 178                                                                                | 325                                                                                 | 51                                                                                  | 226                                                                                 | 144                                                                                 | 169                                                                                 |
| Arrive On Green              | 0.08                                                                              | 0.44                                                                              | 0.44                                                                              | 0.03                                                                              | 0.39                                                                              | 0.39                                                                              | 0.31                                                                               | 0.31                                                                                | 0.31                                                                                | 0.31                                                                                | 0.31                                                                                | 0.31                                                                                |
| Sat Flow, veh/h              | 1767                                                                              | 1611                                                                              | 207                                                                               | 1767                                                                              | 1626                                                                              | 195                                                                               | 332                                                                                | 1052                                                                                | 164                                                                                 | 475                                                                                 | 466                                                                                 | 546                                                                                 |
| Grp Volume(v), veh/h         | 112                                                                               | 0                                                                                 | 482                                                                               | 28                                                                                | 0                                                                                 | 608                                                                               | 293                                                                                | 0                                                                                   | 0                                                                                   | 384                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1767                                                                              | 0                                                                                 | 1818                                                                              | 1767                                                                              | 0                                                                                 | 1821                                                                              | 1548                                                                               | 0                                                                                   | 0                                                                                   | 1488                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 3.8                                                                               | 0.0                                                                               | 12.4                                                                              | 1.0                                                                               | 0.0                                                                               | 18.9                                                                              | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 5.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 3.8                                                                               | 0.0                                                                               | 12.4                                                                              | 1.0                                                                               | 0.0                                                                               | 18.9                                                                              | 9.5                                                                                | 0.0                                                                                 | 0.0                                                                                 | 14.7                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.11                                                                              | 1.00                                                                              |                                                                                   | 0.11                                                                              | 0.29                                                                               |                                                                                     | 0.11                                                                                | 0.37                                                                                |                                                                                     | 0.37                                                                                |
| Lane Grp Cap(c), veh/h       | 144                                                                               | 0                                                                                 | 804                                                                               | 55                                                                                | 0                                                                                 | 713                                                                               | 553                                                                                | 0                                                                                   | 0                                                                                   | 539                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.78                                                                              | 0.00                                                                              | 0.60                                                                              | 0.51                                                                              | 0.00                                                                              | 0.85                                                                              | 0.53                                                                               | 0.00                                                                                | 0.00                                                                                | 0.71                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 243                                                                               | 0                                                                                 | 1093                                                                              | 166                                                                               | 0                                                                                 | 1015                                                                              | 911                                                                                | 0                                                                                   | 0                                                                                   | 875                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 27.9                                                                              | 0.0                                                                               | 13.1                                                                              | 29.5                                                                              | 0.0                                                                               | 17.2                                                                              | 17.8                                                                               | 0.0                                                                                 | 0.0                                                                                 | 19.7                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 8.7                                                                               | 0.0                                                                               | 0.7                                                                               | 7.3                                                                               | 0.0                                                                               | 5.0                                                                               | 0.8                                                                                | 0.0                                                                                 | 0.0                                                                                 | 1.8                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.9                                                                               | 0.0                                                                               | 4.4                                                                               | 0.5                                                                               | 0.0                                                                               | 7.7                                                                               | 3.3                                                                                | 0.0                                                                                 | 0.0                                                                                 | 4.9                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 36.6                                                                              | 0.0                                                                               | 13.8                                                                              | 36.8                                                                              | 0.0                                                                               | 22.2                                                                              | 18.6                                                                               | 0.0                                                                                 | 0.0                                                                                 | 21.5                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | D                                                                                 | A                                                                                 | B                                                                                 | D                                                                                 | A                                                                                 | C                                                                                 | B                                                                                  | A                                                                                   | A                                                                                   | C                                                                                   | A                                                                                   | A                                                                                   |
| Approach Vol, veh/h          | 594                                                                               |                                                                                   |                                                                                   | 636                                                                               |                                                                                   |                                                                                   | 293                                                                                |                                                                                     |                                                                                     | 384                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 18.1                                                                              |                                                                                   |                                                                                   | 22.9                                                                              |                                                                                   |                                                                                   | 18.6                                                                               |                                                                                     |                                                                                     | 21.5                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                  |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 2                                                                                 |                                                                                   | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 23.6                                                                              |                                                                                   | 6.4                                                                               | 31.9                                                                              |                                                                                   | 23.6                                                                              | 9.5                                                                                | 28.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                                | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 33.5                                                                              |                                                                                   | 5.8                                                                               | 37.2                                                                              |                                                                                   | 33.5                                                                              | 8.5                                                                                | 34.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 11.5                                                                              |                                                                                   | 3.0                                                                               | 14.4                                                                              |                                                                                   | 16.7                                                                              | 5.8                                                                                | 20.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 1.8                                                                               |                                                                                   | 0.0                                                                               | 3.0                                                                               |                                                                                   | 2.4                                                                               | 0.1                                                                                | 3.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 20.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary 12: 11th Avenue & SR 198 EB Off Ramp/3rd Street

11/11/2020

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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |  |  |  |  |  |
| Traffic Volume (veh/h)       | 373                                                                               | 216                                                                               | 131                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 872                                                                                 | 207                                                                                 | 171                                                                                 | 658                                                                                 | 0                                                                                   |
| Future Volume (veh/h)        | 373                                                                               | 216                                                                               | 131                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 872                                                                                 | 207                                                                                 | 171                                                                                 | 658                                                                                 | 0                                                                                   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 0                                                                                   |
| Adj Flow Rate, veh/h         | 405                                                                               | 235                                                                               | 142                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 948                                                                                 | 225                                                                                 | 186                                                                                 | 715                                                                                 | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 0                                                                                   |
| Cap, veh/h                   | 874                                                                               | 276                                                                               | 167                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1620                                                                                | 723                                                                                 | 224                                                                                 | 2254                                                                                | 0                                                                                   |
| Arrive On Green              | 0.26                                                                              | 0.26                                                                              | 0.26                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 0.46                                                                                | 0.46                                                                                | 0.13                                                                                | 0.64                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 3428                                                                              | 1083                                                                              | 655                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 3618                                                                                | 1572                                                                                | 1767                                                                                | 3618                                                                                | 0                                                                                   |
| Grp Volume(v), veh/h         | 405                                                                               | 0                                                                                 | 377                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 948                                                                                 | 225                                                                                 | 186                                                                                 | 715                                                                                 | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1714                                                                              | 0                                                                                 | 1738                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1763                                                                                | 1572                                                                                | 1767                                                                                | 1763                                                                                | 0                                                                                   |
| Q Serve(g_s), s              | 8.5                                                                               | 0.0                                                                               | 17.6                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 16.9                                                                                | 7.7                                                                                 | 8.8                                                                                 | 7.8                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 8.5                                                                               | 0.0                                                                               | 17.6                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 16.9                                                                                | 7.7                                                                                 | 8.8                                                                                 | 7.8                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.38                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.00                                                                                |
| Lane Grp Cap(c), veh/h       | 874                                                                               | 0                                                                                 | 443                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1620                                                                                | 723                                                                                 | 224                                                                                 | 2254                                                                                | 0                                                                                   |
| V/C Ratio(X)                 | 0.46                                                                              | 0.00                                                                              | 0.85                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 0.59                                                                                | 0.31                                                                                | 0.83                                                                                | 0.32                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 1066                                                                              | 0                                                                                 | 540                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1620                                                                                | 723                                                                                 | 321                                                                                 | 2254                                                                                | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 26.8                                                                              | 0.0                                                                               | 30.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 17.0                                                                                | 14.5                                                                                | 36.3                                                                                | 7.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 0.4                                                                               | 0.0                                                                               | 10.5                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 1.6                                                                                 | 1.1                                                                                 | 11.5                                                                                | 0.4                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 3.3                                                                               | 0.0                                                                               | 8.1                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 6.5                                                                                 | 2.7                                                                                 | 4.4                                                                                 | 2.6                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 27.2                                                                              | 0.0                                                                               | 40.7                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 18.6                                                                                | 15.6                                                                                | 47.8                                                                                | 7.3                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | D                                                                                 |                                                                                   |                                                                                   |                                                                                   | A                                                                                   | B                                                                                   | B                                                                                   | D                                                                                   | A                                                                                   | A                                                                                   |
| Approach Vol, veh/h          | 782                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 1173                                                                                |                                                                                     |                                                                                     | 901                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 33.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 18.0                                                                                |                                                                                     |                                                                                     | 15.7                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 15.3                                                                              | 43.7                                                                              | 26.2                                                                              |                                                                                   | 59.0                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 15.5                                                                              | 34.5                                                                              | 26.5                                                                              |                                                                                   | 54.5                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 10.8                                                                              | 18.9                                                                              | 19.6                                                                              |                                                                                   | 9.8                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.2                                                                               | 6.4                                                                               | 2.1                                                                               |                                                                                   | 5.9                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 21.6                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary 12: 11th Avenue & SR 198 EB Off Ramp/3rd Street

11/11/2020

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| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |  |  |  |  |  |
| Traffic Volume (veh/h)       | 570                                                                               | 122                                                                               | 116                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 1180                                                                                | 314                                                                                 | 556                                                                                 | 1284                                                                                | 0                                                                                   |
| Future Volume (veh/h)        | 570                                                                               | 122                                                                               | 116                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 1180                                                                                | 314                                                                                 | 556                                                                                 | 1284                                                                                | 0                                                                                   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 0                                                                                   |
| Adj Flow Rate, veh/h         | 594                                                                               | 127                                                                               | 121                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1229                                                                                | 327                                                                                 | 579                                                                                 | 1338                                                                                | 0                                                                                   |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 0                                                                                   |
| Cap, veh/h                   | 670                                                                               | 171                                                                               | 163                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1254                                                                                | 559                                                                                 | 591                                                                                 | 2567                                                                                | 0                                                                                   |
| Arrive On Green              | 0.20                                                                              | 0.20                                                                              | 0.20                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 0.36                                                                                | 0.36                                                                                | 0.33                                                                                | 0.73                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 3428                                                                              | 874                                                                               | 832                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 3618                                                                                | 1572                                                                                | 1767                                                                                | 3618                                                                                | 0                                                                                   |
| Grp Volume(v), veh/h         | 594                                                                               | 0                                                                                 | 248                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1229                                                                                | 327                                                                                 | 579                                                                                 | 1338                                                                                | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1714                                                                              | 0                                                                                 | 1706                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1763                                                                                | 1572                                                                                | 1767                                                                                | 1763                                                                                | 0                                                                                   |
| Q Serve(g_s), s              | 19.9                                                                              | 0.0                                                                               | 16.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 40.7                                                                                | 20.0                                                                                | 38.3                                                                                | 19.6                                                                                | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 19.9                                                                              | 0.0                                                                               | 16.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 40.7                                                                                | 20.0                                                                                | 38.3                                                                                | 19.6                                                                                | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.49                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.00                                                                                |
| Lane Grp Cap(c), veh/h       | 670                                                                               | 0                                                                                 | 334                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1254                                                                                | 559                                                                                 | 591                                                                                 | 2567                                                                                | 0                                                                                   |
| V/C Ratio(X)                 | 0.89                                                                              | 0.00                                                                              | 0.74                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 0.98                                                                                | 0.58                                                                                | 0.98                                                                                | 0.52                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 726                                                                               | 0                                                                                 | 361                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   | 1254                                                                                | 559                                                                                 | 591                                                                                 | 2567                                                                                | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 46.2                                                                              | 0.0                                                                               | 44.7                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 37.6                                                                                | 31.0                                                                                | 38.9                                                                                | 7.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 12.1                                                                              | 0.0                                                                               | 7.5                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 21.1                                                                                | 4.4                                                                                 | 31.7                                                                                | 0.8                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 9.3                                                                               | 0.0                                                                               | 7.3                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 20.5                                                                                | 8.0                                                                                 | 21.5                                                                                | 6.8                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 58.3                                                                              | 0.0                                                                               | 52.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 | 58.7                                                                                | 35.4                                                                                | 70.6                                                                                | 7.8                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | E                                                                                 | A                                                                                 | D                                                                                 |                                                                                   |                                                                                   |                                                                                   | A                                                                                   | E                                                                                   | D                                                                                   | E                                                                                   | A                                                                                   | A                                                                                   |
| Approach Vol, veh/h          | 842                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 1556                                                                                |                                                                                     |                                                                                     | 1917                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 56.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 53.8                                                                                |                                                                                     |                                                                                     | 26.8                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | E                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | D                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 44.0                                                                              | 46.5                                                                              | 27.6                                                                              |                                                                                   | 90.5                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 39.5                                                                              | 42.0                                                                              | 25.0                                                                              |                                                                                   | 86.0                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 40.3                                                                              | 42.7                                                                              | 21.9                                                                              |                                                                                   | 21.6                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.0                                                                               | 1.2                                                                               |                                                                                   | 15.6                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 42.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# **APPENDIX D**

Chapter 400 of Caltrans' Highway Design Manual (HDM)

## CHAPTER 400 INTERSECTIONS AT GRADE

Intersections are planned points of conflict where two or more roadways join or cross. At-grade intersections are among the most complicated elements on the highway system, and control the efficiency, capacity, and safety for motorized and non-motorized users of the facility. The type and operation of an intersection is important to the adjacent property owners, motorists, bicyclists, pedestrians, transit operators, the trucking industry, and the local community.

There are two basic types of at grade intersections: crossing and circular. It is not recommended that intersections have more than four legs. Occasionally, local development and land uses create the need for a more complex intersection design. Such intersections may require a specialized intersection design to handle the specific traffic demands at that location. In addition to the guidance in this manual, see Traffic Operations Policy Directive (TOPD) Number 13-02: Intersection Control Evaluation (ICE) for direction and procedures on the evaluation, comparison and selection of the intersection types and control strategies identified in Index 401.5. Also refer to the Complete Streets Intersection Guide for further information.

### Topic 401 - Factors Affecting Design

#### Index 401.1 - General

At-grade intersections must handle a variety of conflicts among users, which includes truck, transit, pedestrians, and bicycles. These recurring conflicts play a major role in the preparation of design standards and guidelines. Arriving, departing, merging, turning, and crossing paths of moving pedestrians, bicycles, truck, and vehicular traffic have to be accommodated within a relatively small area. The objective of designing an intersection is to effectively balance the convenience, ease, and comfort of the users, as well as the human factors, with moving traffic (automobiles, trucks, motorcycles, transit vehicles, bicycles, pedestrians, etc.). The safety and mobility needs of motorist, bicyclist and pedestrians as well as their movement patterns in intersections must be analyzed early in the planning phase and then

followed through appropriately during the design phase of all intersections on the State highway. It is Departmental policy to develop integrated multimodal projects in balance with community goals, plans, and values.

The Complete Intersections: A Guide to Reconstructing Intersections and Interchanges for Bicyclists and Pedestrians contains a primer on the factors to consider when designing intersections. It is published by the California Division of Traffic Operations.

#### 401.2 Human Factors

- (1) *The Driver.* An appreciation of driver performance is essential to proper highway design and operation. The suitability of a design rests as much on how safely and efficiently drivers are able to use the highway as on any other criterion.

Motorist's perception and reaction time set the standards for sight distance and length of transitions. The driver's ability to understand and interpret the movements and crossing times of the other vehicle drivers, bicyclists, and pedestrians using the intersection is equally important when making decisions and their associated reactions. The designer needs to keep in mind the user's limitations and therefore design intersections so that they meet user expectation.

- (2) *The Bicyclist.* Bicyclist experience, skills and physical capabilities are factors in intersection design. Intersections are to be designed to help bicyclists understand how to traverse the intersection. Chapter 1000 provides intersection guidance for Class I and Class III bikeways that intersect the State highway system. The guidance in this chapter specifically relates to bicyclists that operate within intersections on the State highway system.
- (3) *The Pedestrian.* Understanding how pedestrians will use an intersection is critical because pedestrian volumes, their age ranges, physical ability, etc. all factor in to their startup time and the time it takes them to cross an intersection and thus, dictates how to design the intersection to avoid potential conflicts with bicyclists and motor vehicles. The guidance in this chapter specifically relates to pedestrian travel within

intersections on the State highway system. See Topic 105, Pedestrian Facilities, Design Information Bulletin 82 - “Pedestrian Accessibility Guidelines for Highway Projects,” the AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities, and the California Manual on Uniform Traffic Control Devices (California MUTCD) for additional guidance.

401.3 Traffic Considerations

Good intersection design clearly indicates to bicyclists and motorists how to traverse the intersection (see Figure 403.6A). Designs that encourage merging traffic to yield to through bicycle and motor vehicle traffic are desirable.

The size, maneuverability, and other characteristics of bicycles and motorized vehicles (automobiles, trucks, transit vehicles, farm equipment, etc.) are all factors that influence the design of an intersection. The differences in operating characteristics between bicycles and motor vehicles should be considered early in design.

Table 401.3 compares vehicle characteristics to intersection design elements.

A design vehicle is a convenient means of representing a particular segment of the vehicle population. See Topic 404 for a further discussion of the uses of design vehicles.

Transit vehicles and how their stops interrelate with an intersection, pedestrian desired walking patterns and potential transfers to other transit facilities are another critical factor to understand when designing an intersection. Transit stops and their placement needs to take into account the required maintenance operations that will be needed and usually supplied by the Transit Operator.

401.4 The Physical Environment

In highly developed urban areas, where right of way is usually limited, the volume of vehicular traffic, pedestrians, and bicyclists may be large, street parking exists, and transit stops (for both buses and light rail) are available. All interact in a variety of movements that contribute to and add to the complexity of a State highway and can result in busy intersections.

Industrial development may require special attention to the movement of large trucks.

Rural areas where farming occurs may require special attention for specialized farm equipment. In addition, rural cities or town centers (rural main streets) also require special attention.

Rural intersections in farm areas with low traffic volumes may have special visibility problems or require shadowing of left-turn vehicles from high speed approach traffic.

Table 401.3

| Vehicle Characteristics | Intersection Design Element Affected     |
|-------------------------|------------------------------------------|
| Length                  | Length of storage lane                   |
| Width                   | Lane width                               |
| Height                  | Clearance to overhead signs and signals  |
| Wheel base              | Corner radius and width of turning lanes |
| Acceleration            | Tapers and length of acceleration lane   |
| Deceleration            | Tapers and length of deceleration lane   |

There are many factors to be considered in the design of intersections, with the goal to achieve a functional, safe and efficient intersection for all users of the facility. The location and level of use by various modes will have an impact on intersection design, and therefore should be considered early in the design process. In addition to current levels of use, it is important to consider future travel patterns for vehicles, including trucks; pedestrian and bicycle demand and the future expansion of transit.

401.5 Intersection Type

Intersection types are characterized by their basic geometric configuration, and the form of intersection traffic control that is employed:

**(1) Geometric Configurations**

- (a) Crossing-Type Intersections - “Tee” and 4-legged intersections
- (b) Circular Intersections –roundabouts, traffic circles, rotaries; however, only roundabouts are acceptable for State highways.
- (c) Alternative Intersection Designs – various effective geometric alternatives to traditional designs that can reduce crashes and their severity, improve operations, reduce congestion and delay typically by reducing or altering the number of conflict points; these alternatives include geometric design features such as intersections with displaced left-turns or variations on U-turns.

**(2) Intersection Control strategies, See California MUTCD and Traffic Operations Policy Directive (TOPD) Number 13-02, Intersection Control Evaluation** for procedures and guidance on how to evaluate, compare and select from among the following intersection control strategies:

- (a) Two-Way Stop Controlled - for minor road traffic
- (b) All-Way Stop Control
- (c) Signal Control
- (d) Yield Control (Roundabout)

Historically, crossing-type intersections with signal or “STOP”-control have been used on the State highway system. However, other intersection types, given the appropriate circumstances may enhance intersection performance through fewer or less severe crashes and improve operations by reducing overall delay. Alternative intersection geometric designs should be considered and evaluated early in the project scoping, planning and decision-making stages, as they may be more efficient, economical and safer solutions than traditional designs. Alternative intersection designs can effectively balance the safety and mobility needs of the motor vehicle drivers, transit riders, bicyclists and pedestrians using the intersection.

**401.6 Transit**

Transit use may range from periodic buses, handled as part of the normal mix of vehicular traffic, to Bus Rapid Transit (BRT) or light rail facilities which can

have a large impact on other users of the intersection. Consideration of these modes should be part of the early planning and design of intersections.

**Topic 402 - Operational Features Affecting Design****402.1 Capacity**

Adequate capacity to handle peak period traffic demands is a basic goal of intersection design.

- (1) *Unsignalized Intersections.* The “Highway Capacity Manual”, provides methodology for capacity analysis of unsignalized intersections controlled by “STOP” or “YIELD” signs. The assumption is made that major street traffic is not affected by the minor street movement. Unsignalized intersections generally become candidates for signalization when traffic backups begin to develop on the cross street or when gaps in traffic are insufficient for drivers to yield to crossing pedestrians. See the California MUTCD, for signal warrants. Changes to intersection controls must be coordinated with District Traffic Branch.
- (2) *Signalized Intersections.* See Topic 406 for analysis of simple signalized intersections, including ramps. The analysis of complex and alternative intersections should be referred to the District Traffic Branch; also see Traffic Operations Policy Directive (TOPD) Number 13-02.
- (3) *Roundabout Intersections.* See TOPD Number 13-02 for screening process and the Intersection Control Evaluation(ICE) Process Informational Guide for operational analysis methods and tools.

**402.2 Collisions**

- (1) *General.* Intersections have a higher potential for conflict compared to other sections of the highway because travel is interrupted, traffic streams cross, and many types of turning movements occur.

The type of traffic control affects the type of collisions. Signalized intersections tend to have more rear end and same-direction



sideswipes than intersections with “STOP”-control on minor legs. Roundabouts experience few angle or crossing collisions. Roundabouts reduce the frequency and severity of collisions, especially when compared to the performance of signalized intersections in high speed environments. Other alternative intersection types are configurations to consider for minimizing the number of conflict points.

(2) *Undesirable Geometric Features.*

- Inadequate approach sight distance.
- Inadequate corner sight distance.
- Steep grades.
- Five or more approaches.
- Presence of curves within intersections(unless at roundabouts).
- Inappropriately large curb radii.
- Long pedestrian crossing distances.
- Intersection Angle <75 degrees (see Topic 403).

### 402.3 On-Street Parking

On-street parking generally decreases through-traffic capacity, impedes traffic flow, and increases crash potential. Where the primary service of the arterial is the movement of vehicles, it may be desirable to prohibit on-street parking on State highways in urban and suburban expressways and rural arterial sections. However, within urban and suburban areas and in rural communities located on State highways, on-street parking should be considered in order to accommodate existing land uses. Where adequate off-street parking facilities are not available, the designer should consider on-street parking, so that the proposed highway improvement will be compatible with the land use. On-street parking as well as off-street parking needs to comply with DIB82. See AASHTO, A Policy on Geometric Design of Highways and Streets for additional guidance related to on-street parking.

### 402.4 Consider All Users

Intersections should accommodate all users of the facility, including vehicles, bicyclists, pedestrians and transit. Bicycles have all the rights and responsibilities as motorist per the California

Vehicle Code, but should have separate consideration of their needs, even separate facilities if volumes warrant. Pedestrians should not be prohibited from crossing one or more legs of an intersection, unless no other safe alternative exists. Pedestrians can be prohibited from crossing one or more legs of an intersection if a reasonable alternate route exists and there is a demonstrated need to do so. All pedestrian facilities shall be ADA compliant as outlined in DIB 82. Transit needs should be determined early in the planning and design phase as their needs can have a large impact on the performance of an intersection. Transit stops in the vicinity of intersections should be evaluated for their effect on the safety and operation of the intersection(s) under study. See Topic 108 for additional information.

### 402.5 Speed-Change Areas

Speed-change areas for vehicles entering or leaving main streams of traffic are beneficial to the safety and efficiency of an intersection. Entering traffic merges most efficiently with through traffic when the merging angle is less than 15 degrees and when speed differentials are at a minimum.

## Topic 403 - Principles of Channelization

### 403.1 Preference to Major Movements

The provision of direct free-flowing high-standard alignment to give preference to major movements is good channelization practice. This may require some degree of control of the minor movements such as stopping, funneling, or even eliminating them. These controlling measures should conform to natural paths of movement and should be introduced gradually to promote smooth and efficient operation.

### 403.2 Areas of Conflict

Large multilane undivided intersection areas are undesirable. The hazards of conflicting movements are magnified when motorists, bicyclists, and pedestrians are unable to anticipate movements of other users within these areas. Channelization reduces areas of conflict by separating or regulating traffic movements into definite paths of travel by the use of pavement markings or traffic islands.

Multilane undivided intersections, even with signalization, are more difficult for pedestrians to cross. Providing pedestrian refuge islands enable pedestrians to cross fewer lanes at a time.

See Index 403.7 for traffic island guidance when used as pedestrian refuge. Curb extensions shorten crossing distance and increase visibility. See Index 303.4 for curb extensions.

### 403.3 Angle of Intersection

A right angle (90°) intersection provides the most favorable conditions for intersecting and turning traffic movements. Specifically, a right angle provides:

- The shortest crossing distance for motor vehicles, bicycles, and pedestrians.
- Sight lines which optimize corner sight distance and the ability of motorists to judge the relative position and speed of approach traffic.
- Intersection geometry that can reduce vehicle turning speeds so collisions are more easily avoided and the severity of collisions are minimized.
- Intersection geometry that sends a message to turning bicyclists and motorists that they are making a turning movement and should yield as appropriate to through traffic on the roadway they are leaving, to traffic on the receiving roadway, and to pedestrians crossing the intersection.

Minor deviations from right angles are generally acceptable provided that the potentially detrimental impact on visibility and turning movements for large trucks (see Topic 404) can be mitigated. However, large deviations from right angles may decrease visibility, hamper certain turning operations, and will increase the size of the intersection and therefore crossing distances for bicyclists and pedestrians, may encourage high speed turns, and may reduce yielding by turning traffic. When a right angle cannot be provided due to physical constraints, the interior angle should be designed as close to 90 degrees as is practical, but should not be less than 75 degrees. Mitigation should be considered for the affected intersection design features. (See Figure 403.3A). A 75 degree angle does not unreasonably increase the crossing distance or generally decrease visibility. Class II bikeway crossings at railroads follow similar

guidance to Class I bikeway crossings at railroads, see Index 1003.5(3), and Figure 403.3B.

A characteristic of skewed intersection angles is that they result in larger intersections.

When existing intersection angles are less than 75 degrees, the following retrofit improvement strategies should be considered:

- Realign the subordinate intersection legs if the new alignment and intersection location(s) can be designed without introducing new geometric or operational deficiencies.
- Provide acceleration lanes for difficult turning movements due to radius or limited visibility.
- Restrict problematic turning movements; e.g. for minor road left turns with potentially limited visibility.
- Provide refuge areas for pedestrians at very long crossings.

For additional guidance on the above and other improvement strategies, consult with the District Design Liaison.

Particular attention should be given to skewed angles on curved alignment with regards to sight distance and visibility. Crossroads skewed to the left have more restricted visibility for drivers of vans and trucks than crossroads skewed to the right. In addition, severely skewed intersection angles, coupled with steep downgrades (generally over 4 percent) can increase the potential for high centered vehicles to overturn where the vehicle is on a downgrade and must make a turn greater than 90 degrees onto a crossroad. These factors should be considered in the design of skewed intersections.

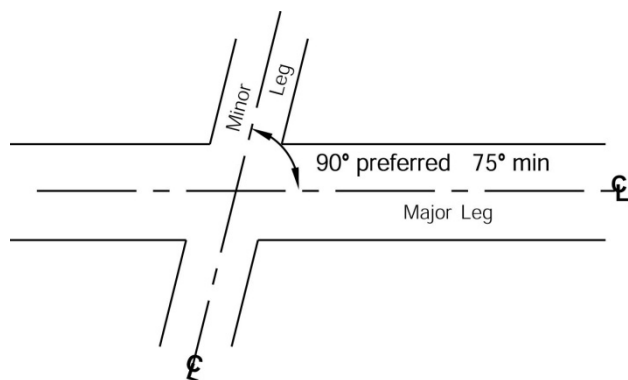
### 403.4 Points of Conflict

Channelization separates and clearly defines points of conflict within the intersection. Bicyclists, pedestrians and motorists should be exposed to only one conflict or confronted with one decision at a time.

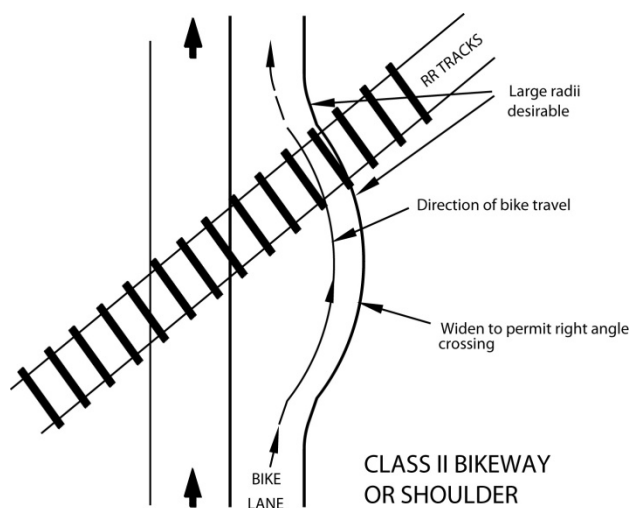
Speed-change areas for diverging traffic should provide adequate length clear of the through lanes to permit vehicles to decelerate after leaving the through lanes.

See AASHTO, A Policy on Geometric Design of Highways and Streets for additional guidance on speed-change lanes.

**Figure 403.3A**  
**Angle of Intersection**  
**(Minor Leg Skewed to the Right)**



**Figure 403.3B**  
**Class II Bikeway**  
**Crossing Railroad**



#### 403.5 (Currently Not In Use)

#### 403.6 Turning Traffic

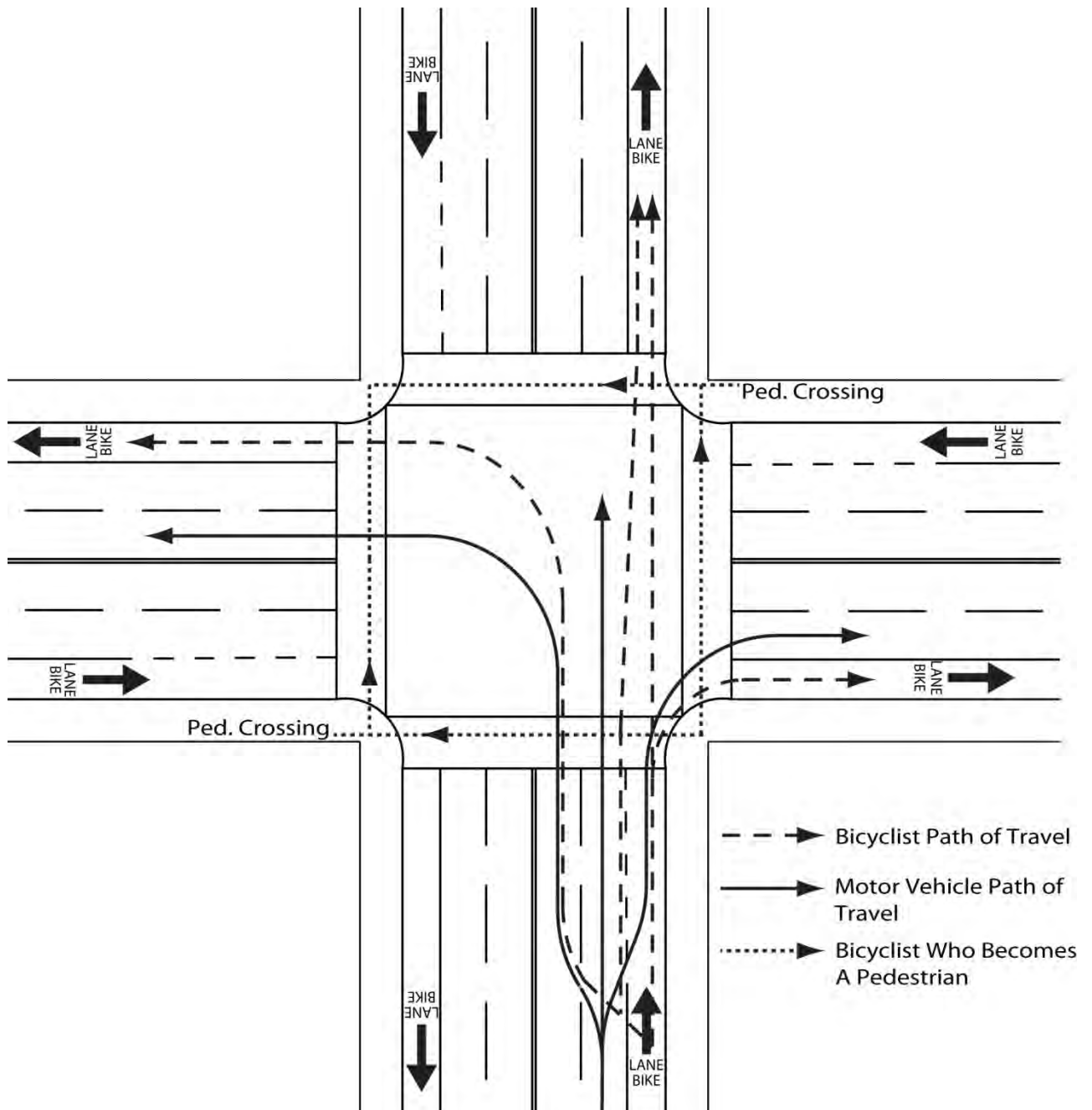
A separate turning lane removes turning movements from the intersection area. Abrupt changes in alignment or sight distance should be avoided, particularly where traffic turns into a separate turning lane from a high-standard through facility.

For wide medians, consider the use of offset left-turn lanes at both signalized and unsignalized intersections. Opposing left-turn lanes are offset or shifted as far to the left as practical by reducing the width of separation immediately before the intersection. Rather than aligning the left-turn lane exactly parallel with and adjacent to the through lane, the offset left-turn lane is separated from the adjacent through lane. Offset left-turn lanes provide improved visibility of opposing through traffic. For further guidance on offset left-turn lanes, see AASHTO, A Policy on Geometric Design of Highways and Streets.

- (1) *Treatment of Intersections with Right-Turn-Only Lanes.* Most motor vehicle/bicycle collisions occur at intersections. For this reason, intersection design should be accomplished in a manner that will minimize confusion by motorists and bicyclists, eliminate ambiguity and induce all road users to operate in accordance with the statutory rules of the road in the California Vehicle Code. Right-turn-only lanes should be designed to meet user expectations and reduce conflicts between vehicles and bicyclists.

Figure 403.6A illustrates a typical at-grade intersection of multilane streets without right-turn-only lanes. Bike lanes or shoulders are included on all approaches. Some common movements of motor vehicles and bicycles are shown. A prevalent crash type is between straight-through bicyclists and right-turning motorists, who do not yield to through bicyclists.

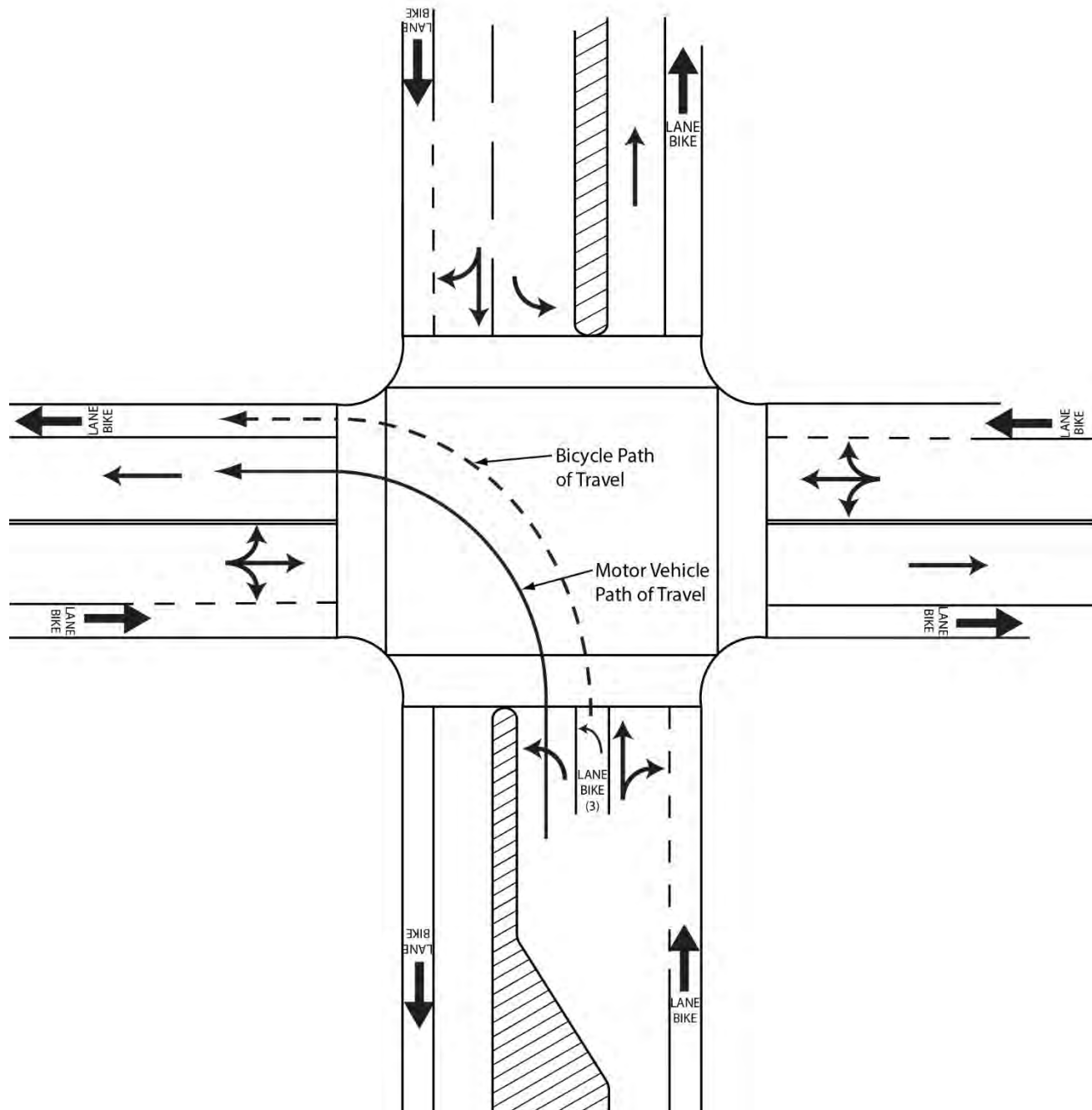
Optional right-turn lanes should not be used in combination with right-turn-only lanes on roads where bicycle travel is permitted. The use of optional right-turn lanes in combination with right-turn-only lanes is not recommended in any case where a Class II bike lane is present. This may increase the need for dual or triple right-turn-only lanes, which have

**Figure 403.6A****Typical Bicycle and Motor Vehicle Movements at Intersections of Multilane Streets without Right-Turn-Only Lanes**

NOTE:

Only one direction is shown for clarity.

**Figure 403.6B**  
**Bicycle Left-Turn-Only Lane**



NOTES:

- (1) For bicycle lane markings, see the California MUTCD.
- (2) Bicycle detectors are necessary for signalized intersections.
- (3) Left-turn bicycle lane should have receiving bike lane or shoulder.

challenges with visibility between turning vehicles and pedestrians. Multiple right-turn-only lanes should not be free right-turns when there is a pedestrian crossing. If there is a pedestrian crossing on the receiving leg of multiple right-turn-only lanes, the intersection should be controlled by a pedestrian signal head, or geometrically designed such that pedestrians cross only one turning lane at a time.

Locations with right-turn-only lanes should provide a minimum 4-foot width for bicycle use between the right-turn and through lane when bikes are permitted, except where posted speed is greater than 40 miles per hour, the minimum width should be 6 feet. Configurations that create a weaving area without defined lanes should not be used.

For signing and delineation of bicycle lanes at intersections, consult District Traffic Operations.

Figure 403.6B depicts an intersection with a left-turn-only bicycle lane, which should be considered when bicycle left-turns are common. A left-turn-only bicycle lane may be considered at any intersection and should always be considered as a tool to provide mobility for bicyclists. Signing and delineation options for bicycle left-turn-only lanes are shown in the California MUTCD.

- (2) *Design of Intersections at Interchanges.* The design of at-grade intersections at interchanges should be accomplished in a manner that will minimize confusion of motorists, bicyclists, and pedestrians. Higher speed, uncontrolled entries and exits from freeway ramps should not be used at the intersection of the ramps with the local road. The smallest curb return radius should be used that accommodates the design vehicle. Intersections with interior angles close to 90 degrees reduce speeds at conflict points between motorists, bicyclists, and pedestrians. The intersection skew guidance in Index 403.3 applies to all ramp termini at the local road.

### 403.7 Refuge Areas

Traffic islands should be used to provide refuge areas for bicyclists and pedestrians. See Index 405.4 for further guidance.

### 403.8 Prohibited Turns

Traffic islands may be used to direct bicycle and motorized vehicle traffic streams in desired directions and prevent undesirable movements. Care should be taken so that islands used for this purpose accommodate convenient and safe pedestrian and bicycle crossings, drainage, and striping options. See Topic 303.

### 403.9 Effective Signal Control

At intersections with complex turning movements, channelization is required for effective signal control. Channelization permits the sorting of approaching bicycles and motorized vehicles which may move through the intersection during separate signal phases. Pedestrians may also have their own signal phase. This requirement is of particular importance when traffic-actuated signal controls are employed.

The California MUTCD has warrants for the placement of signals to control vehicular, bicycle and pedestrian traffic. Pedestrian activated devices, signals or beacons are not required, but must be evaluated where directional, multilane, pedestrian crossings occur. These locations may include:

- Mid-block street crossings;
- Channelized turn lanes;
- Ramp entries and exits; and
- Roundabouts.

The evaluation, selection, programming and use of a chosen device should be done with guidance from District Traffic Operations.

### 403.10 Installation of Traffic Control Devices

Channelization may provide locations for the installation of essential traffic control devices, such as “STOP” and directional signs. See Index 405.4 for information about the design of traffic islands.

### 403.11 Summary

- Give preference to the major move(s).

- Reduce areas of conflict.
- Reduce the duration of conflicts.
- Cross traffic at right angles or skew no more than 75 degrees. (90 degrees preferred.)
- Separate points of conflict.
- Provide speed-change areas and separate turning lanes where appropriate.
- Provide adequate width to shadow turning traffic.
- Restrict undesirable moves with traffic islands.
- Coordinate channelization with effective signal control.
- Install signs in traffic islands when necessary but avoid building conflicts one or more modes of travel.
- Consider all users.

### 403.12 Other Considerations

- An advantage of curbed islands is they can serve as pedestrian refuge. Where curbing is appropriate, consideration should be given to mountable curbs. See Topic 303 for more guidance.
- Avoid complex intersections that present multiple choices of movement to the motorist and bicyclist.
- Traffic safety should be considered. Collision records provide a valuable guide to the type of channelization needed.

## Topic 404 - Design Vehicles

### 404.1 General

Any vehicle, whether car, bus, truck, or recreational vehicle, while turning a curve, covers a wider path than the width of the vehicle. The outer front tire can generally follow a circular curve, but the inner rear tire will swing in toward the center of the curve.

Some terminology is vital to understanding the engineering concepts related to design vehicles. See Index 62.4 Interchanges and Intersection at Grade for terminology.

### 404.2 Design Considerations

It may not be necessary to provide for design vehicle turning movements at all intersections along the State route if the design vehicle's route is restricted or it is not expected to use the cross street frequently. Discuss with Traffic Operations and the local agency before a turning movement is not provided. The goal is to minimize possible conflicts between vehicles, bicycles, pedestrians, and other users of the roadway, while providing the minimum curb radii appropriate for the given situation.

Both the tracking width and swept width should be considered in the design of roadways for use of the roadway by design vehicles.

Tracking width lines delineate the path of the vehicle tires as the vehicle moves through the turn.

Swept width lines delineate the path of the vehicle body as the vehicle moves through the turn and will therefore always exceed the tracking width. The following list of criteria is to be used to determine whether the roadway can accommodate the design vehicle.

#### (1) *Traveled way.*

- (a) To accommodate turn movements(e.g., at intersections, driveways, alleys, etc.),the travel way width and intersection design should be such that tracking width and swept width lines for the design vehicle do not cross into any portion of the lane for opposing traffic. Encroachment into the shoulder and bike lane is permitted.

- (b) Along the portion of roadway where there are no turning options, vehicles are required to stay within the lane lines. **The tracking and swept widths lines for the design vehicle shall stay within the lane as defined in Index 301.1 and Table 504.3.** This includes no encroachment into Class II bike lanes.

- (2) *Shoulders.* Both tracking width and swept width lines may encroach onto paved shoulders to accommodate turning. For design projects where the tracking width lines are shown to encroach onto paved shoulders, the shoulder pavement structure should be engineered to sustain the weight of the design vehicle. See Index 613 for general traffic loading



considerations and Index 626 for tied rigid shoulder guidance. At corners where no sidewalks are provided and pedestrians are using the shoulder, a paved refuge area may be provided outside the swept width of turning vehicle.

- (3) *Curbs and Gutters.* Tires may not mount curbs. If curb and gutter are present and any portion of the gutter pan is likewise encroached, the gutter pan must be engineered to match the adjacent shoulder pavement structure. See Index 613.5(2)(c) for gutter pan design guidance.
- (4) *Edge of Pavement.* To accommodate a turn, the swept width lines may cross the edge of pavement provided there are no obstructions. The tracking width lines must remain on the pavement structure, including the shoulder, provided that the shoulder is designed to support vehicular traffic. If truck volumes are high, consideration of a wider shoulder is encouraged in order to preserve the pavement edge.
- (5) *Bicycle Lanes.* Where bicycle lanes are considered, the design guidance noted above applies. Vehicles are permitted to cross a bicycle lane to initiate or complete a turning movement or for emergency parking on the shoulder. See the California MUTCD for Class II bike lane markings.  
  
To accommodate turn movements (e.g., intersections, driveways, alleys, etc. are present), both tracking width and swept width lines may cross the broken white painted bicycle lane striping in advance of the right-turn, entering the bicycle lane when clear to do so.
- (6) *Sidewalks.* Tracking width and swept width lines must not encroach onto sidewalks or pedestrian refuge areas, without exception.
- (7) *Obstacles.* Swept width lines may not encroach upon obstacles including, but not limited to, curbs, islands, sign structures, traffic delineators/channelizers, traffic signals, lighting poles, guardrails, trees, cut slopes, and rock outcrops.
- (8) *Appurtenances.* Swept width lines do not include side mirrors or other appurtenances allowed by the California Vehicle Code, thus,

accommodation to non-motorized users of the facility and appurtenances should be considered.

If both the tracking width and swept width lines meet the design guidance listed above, then the geometry is adequate for that design vehicle. Consideration should be given to pedestrian crossing distance, motor vehicle speeds, truck volumes, alignment, bicycle lane width, sight distance, and the presence of on-street parking.

Note that the STAA Design Vehicle has a template with a 56-foot (minimum) and a 67-foot (longer) radius and the California Legal Design Vehicle has a template with 50-foot (minimum) and 60-foot (longer) radii. These templates are shown in Figures 404.5A through 404.5D. The longer radius templates are more conservative. The longer radius templates develop less swept width and leave a margin of error for the truck driver. The longer radius templates should be used for conditions where the vehicle may not be required to stop before entering the intersection.

The minimum radius template can be used if the longer radius template does not clear all obstacles. The minimum radius templates demonstrate the tightest turn that the vehicles can navigate, assuming a speed of less than 10 miles per hour.

For offtracking lane width requirements on freeway ramps, see Topic 504.

### 404.3 Design Tools

District Truck Managers should be consulted early in the project to ensure compliance with the design vehicle guidance contained in Topic 404. Consult local agencies to verify the location of local truck routes. Essentially, two options are available – templates or computer software.

- The turning templates in Figures 404.5A through G are a design aid for determining the swept width and/or tracking width of large vehicles as they maneuver through a turn. The templates can be used as overlays to evaluate the adequacy of the geometric layout of a curve or intersection when reproduced on clear film and scaled to match the highway drawings. These templates assume a vehicle speed of less than 10 miles per hour.

- Computer software such as AutoTURN or AutoTrak can draw the swept width and/or tracking width along any design curve within a CADD drawing program such as MicroStation or AutoCAD. Dimensions taken from the vehicle diagrams in Figures 404.5A through G may be inputted into the computer program by creating a custom vehicle if the vehicle is not already included in the software library. The software can also create a vehicle turn template that conforms to any degree curve desired.

#### 404.4 Design Vehicles and Related Definitions

(1) *The Surface Transportation Assistance Act of 1982 (STAA).*

- STAA Routes. STAA allows certain longer trucks called STAA trucks to operate on the National Network. After STAA was enacted, the Department evaluated State routes for STAA truck access and created Terminal Access and Service Access routes which, together with the National Network, are called the STAA Network. Terminal Access routes allow STAA access to terminals and facilities. Service Access routes allow STAA trucks one-mile access off the National Network, but only at identified exits and only for designated services. Service Access routes are primarily local roads. A “Truck Route Map,” indicating the National Network routes and the Terminal Access routes is posted on the Department’s Office of Commercial Vehicle Operations website and is also available in printed form.
- STAA Design Vehicle. The STAA design vehicle is a truck tractor-semitrailer combination with a 48-foot semitrailer, a 43-foot kingpin-to-rear-axle (KPR) distance, an 8.5-foot body and axle width, and a 23-foot truck tractor wheelbase. Note, a truck tractor is a non-load-carrying vehicle. There is also a STAA double (truck tractor-semitrailer-trailer); however, the double is not used as the design vehicle due to its shorter turning radius. The STAA Design Vehicle is shown in Figures 404.5A and B.

The STAA Design Vehicle in Figures 404.5A or B should be used on the National Network, Terminal Access, California Legal, and Advisory routes.

- STAA Vehicle – 53-Footer Trailer. Another category of vehicle allowed only on STAA routes has a maximum 53-foot trailer, a maximum 40-foot KPR for two or more axles, a maximum 38-foot KPR for a single axle, and unlimited overall length. This vehicle is not to be used as the design vehicle as it is not the worst case for offtracking due to its shorter KPR. The STAA Design Vehicle should be used instead.
- (2) *California Legal.*
- California Legal Routes. Virtually all State routes off the STAA Network are California Legal routes. There are two types of California Legal routes, the regular California Legal routes and the KPR Advisory Routes. Advisory routes have signs posted that state the maximum KPR length that the route can accommodate without the vehicle offtracking outside the lane. KPR advisories range from 30 feet to 38 feet, in 2-foot increments. California Legal vehicles are allowed to use both types of California Legal routes. California Legal vehicles can also use the STAA Network. However, STAA trucks are not allowed on any California Legal routes. The Truck Route Map indicating the California Legal routes is posted on the Department’s Office of Commercial Vehicle Operations website.
  - California Legal Design Vehicle. The California Legal vehicle is a truck tractor-semitrailer with the following dimensions: the maximum overall length is 65 feet; the maximum KPR distance is 40 feet for semitrailers with two or more axles, and 38 feet for semitrailers with a single axle; the maximum width is 8.5 feet. There are also two categories of California Legal doubles (truck tractor-semitrailer-trailer); however, the doubles are not used as the design vehicle due to their shorter turning radii. The California Legal Design Vehicle is shown in Figures 404.5C and D.

The California Legal Design Vehicle in Figures 404.5C and D should only be used when the STAA design vehicle is not feasible and with concurrence from the District Truck Manager.

(3) *40-Foot Bus.*

- (a) 40-Foot Bus Routes. All single-unit vehicles, including buses and motor trucks up to 40 feet in length, are allowed on virtually every route in California.
- (b) 40-Foot Bus Design Vehicle. The 40-Foot Bus Design Vehicle shown in Figure 404.5E is an AASHTO standard. Its 25-foot wheelbase and 40-foot length are typical of city transit buses and some intercity buses. At intersections where truck volumes are light or where the predominate truck traffic consists of mostly 3-axle units, the 40-foot bus may be used. Its wheel path sweeps a greater width than 3-axle delivery trucks, as well as smaller buses such as school buses.

(4) *45-Foot Bus & Motorhome.*

- (a) 45-Foot Bus & Motorhome Routes. The “45-foot bus and motorhome” refers to bus and motorhomes over 40 feet in length, up to and including 45 feet in length. These longer buses and motorhomes are allowed in California, but only on certain routes.

The 45-foot tour bus became legal on the National Network in 1991 and later allowed on some State routes in 1995. The 45-foot motorhome became legal in California in 2001, but only on those routes where the 45-foot bus was already allowed. A Bus and Motorhome Map indicating where these longer buses and motorhomes are allowed and where they are not allowed is posted on the Department’s Office of Commercial Vehicle Operations website.

- (b) 45-Foot Bus and Motorhome Design Vehicle. The 45-Foot Bus & Motorhome Design Vehicle shown in Figure 404.5F is used by Caltrans for the longest allowable bus and motorhome. Its wheelbase is 28.5 feet. It is also similar to the AASHTO standard 45-foot bus. Typically this should

be the smallest design vehicle used on a State highway. It may be used where the State highway intersects local streets without commercial or industrial traffic.

The 45-Foot Bus and Motorhome Design Vehicle shown in Figure 404.5F should be used in the design of all interchanges and intersections on all green routes indicated on the Bus and Motorhome Map for both new construction and rehabilitation projects. Check also the longer standard design vehicles on these routes as required – the STAA Design Vehicle and the California Legal Design Vehicle in Indexes 404.4(1) and (2).

(5) *60-Foot Articulated Bus.*

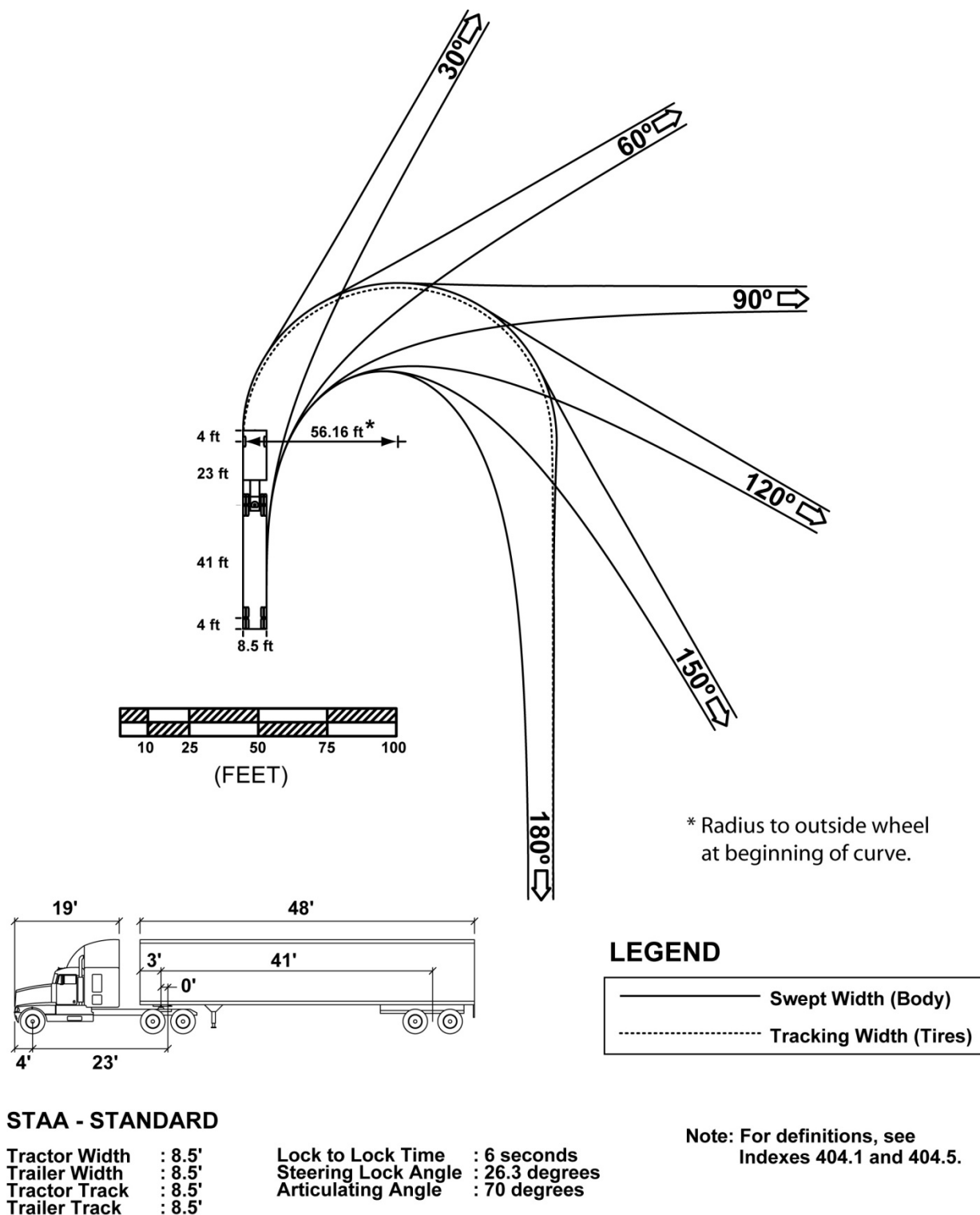
- (a) 60-Foot Articulated Bus Routes. The articulated bus is allowed a length of up to 60 feet per CVC 35400(b)(3)(A). This bus is used primarily by local transit agencies for public transportation. There is no master listing of such routes. Local transit agencies should be contacted to determine possible routes within the proposed project.
- (b) 60-Foot Articulated Bus Design Vehicle. The 60-Foot Articulated Bus Design Vehicle shown in Figure 404.5G is an AASHTO standard. The routes served by these buses should be designed to accommodate the 60-Foot Articulated Bus Design Vehicle.

### 404.5 Turning Templates & Vehicle Diagrams

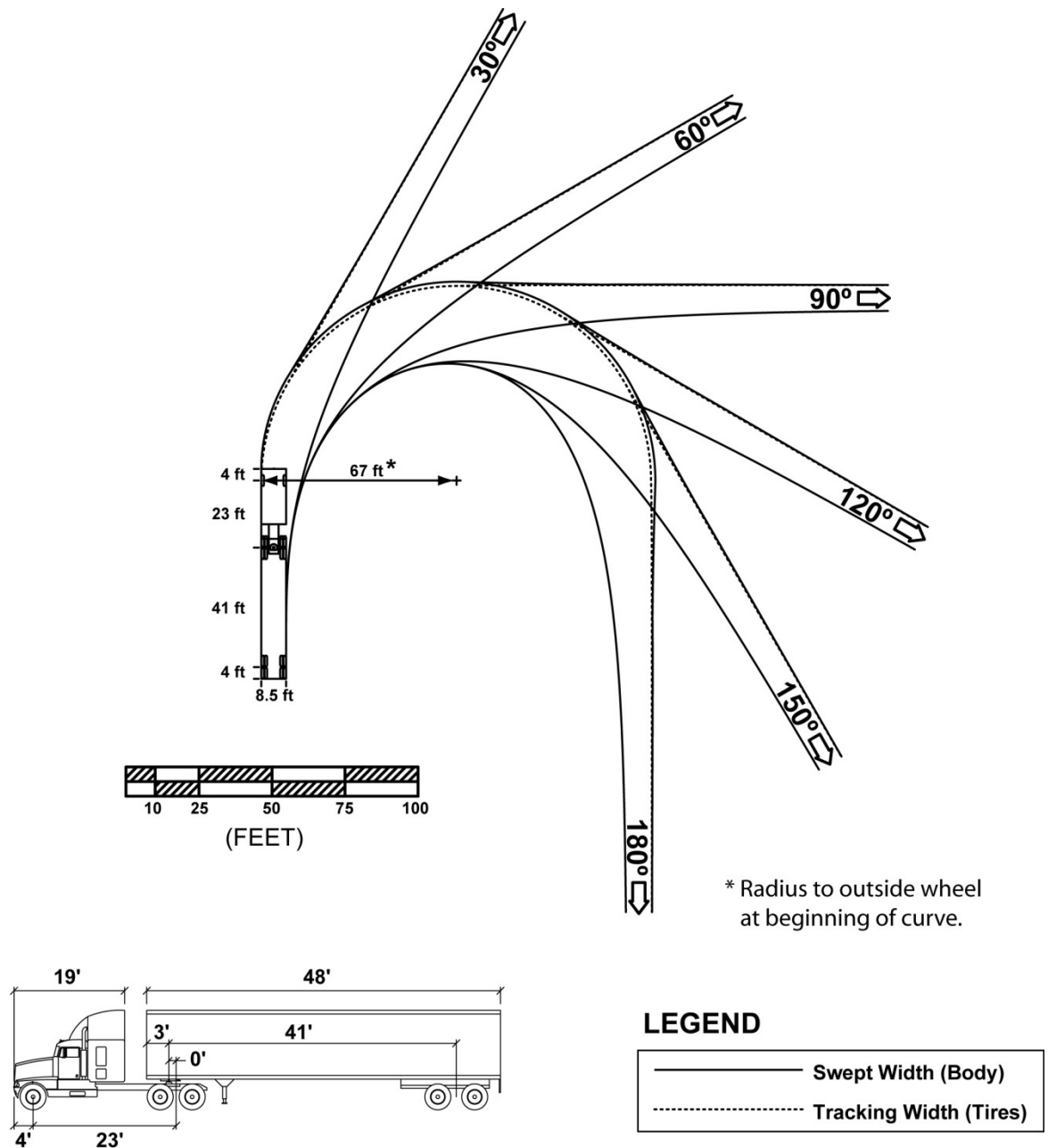
Figures 404.5A through G are computer-generated turning templates at an approximate scale of 1"=50' and their associated vehicle diagrams for the design vehicles described in Index 404.3. The radius of the template is measured to the outside front wheel path at the beginning of the curve. Figures 404.5A through G contain the terms defined as follows:

- (1) *Tractor Width* - Width of tractor body.
- (2) *Trailer Width* - Width of semitrailer body.
- (3) *Tractor Track* - Tractor axle width, measured from outside face of tires.

**Figure 404.5A**  
**STAA Design Vehicle**  
**56-Foot Radius**



**Figure 404.5B**  
**STAA Design Vehicle**  
**67-Foot Radius**



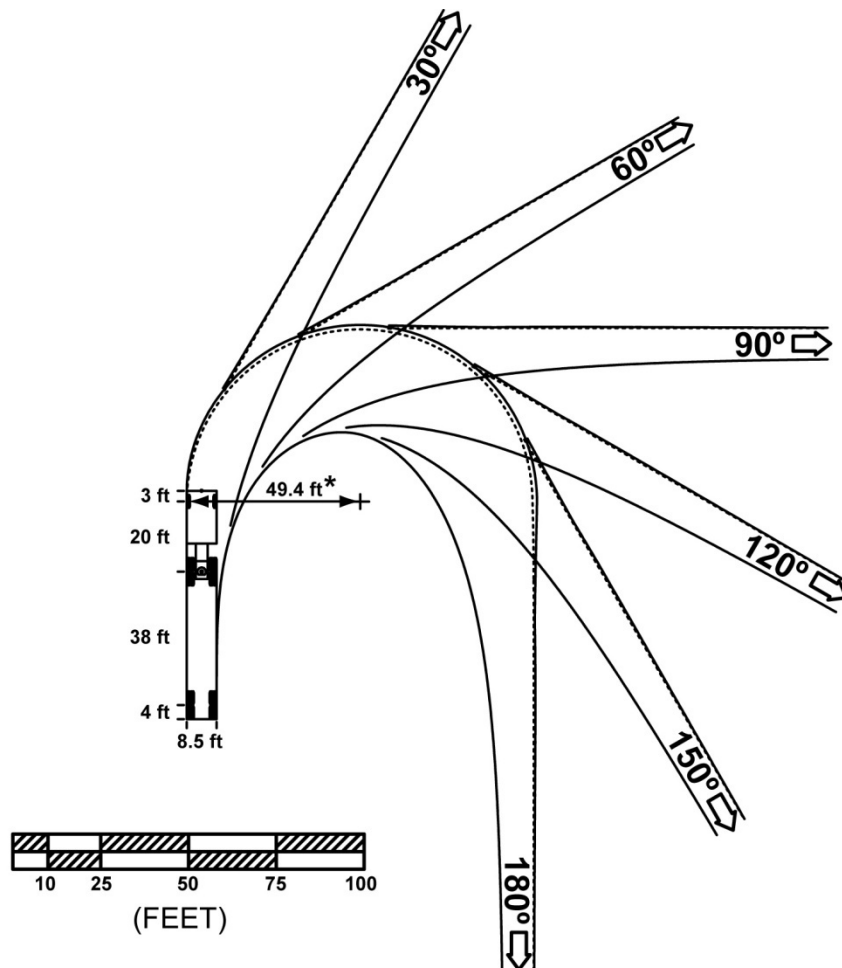
**STAA - STANDARD**

Tractor Width : 8.5'  
 Trailer Width : 8.5'  
 Tractor Track : 8.5'  
 Trailer Track : 8.5'

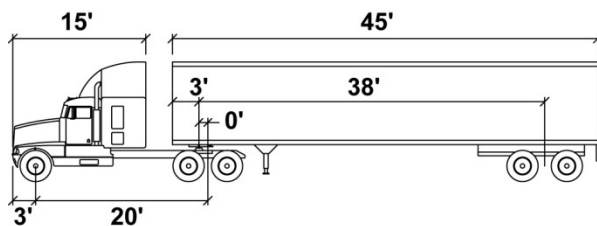
Lock to Lock Time : 6 seconds  
 Steering Lock Angle : 26.3 degrees  
 Articulating Angle : 70 degrees

Note: For definitions, see  
 Indexes 404.1 and 404.5.

**Figure 404.5C**  
**California Legal Design Vehicle**  
**50-Foot Radius**



\* Radius to outside wheel  
at beginning of curve.



### LEGEND

|  |                        |
|--|------------------------|
|  | Swept Width (Body)     |
|  | Tracking Width (Tires) |

### CA LEGAL - 65 FT

|               |        |                     |                |
|---------------|--------|---------------------|----------------|
| Tractor Width | : 8.5' | Lock to Lock Time   | : 6 seconds    |
| Trailer Width | : 8.5' | Steering Lock Angle | : 26.3 degrees |
| Tractor Track | : 8.5' | Articulating Angle  | : 70 degrees   |
| Trailer Track | : 8.5' |                     |                |

Note: For definitions, see  
Indexes 404.1 and 404.5.

**Figure 404.5D**  
**California Legal Design Vehicle**  
**60-Foot Radius**

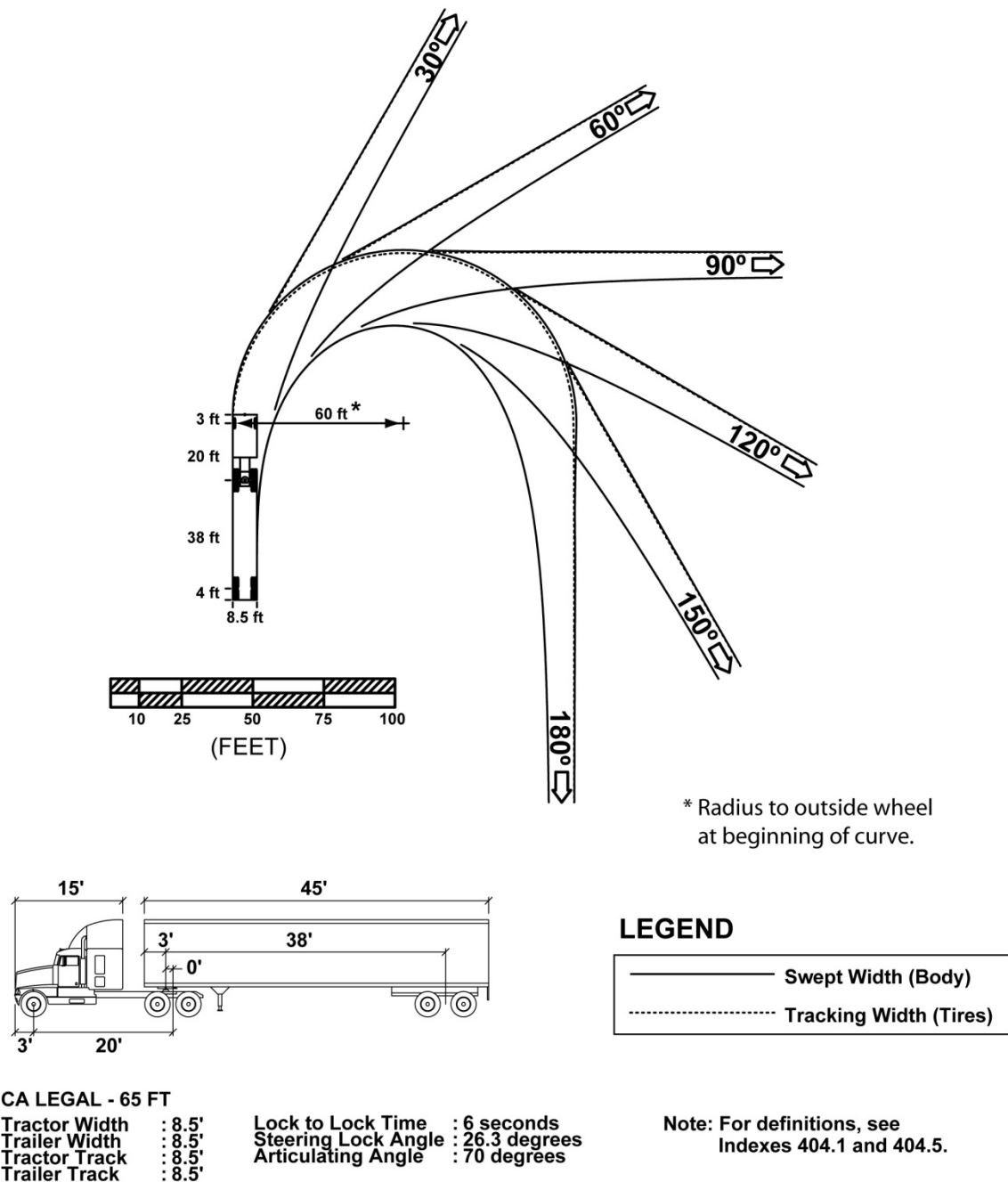
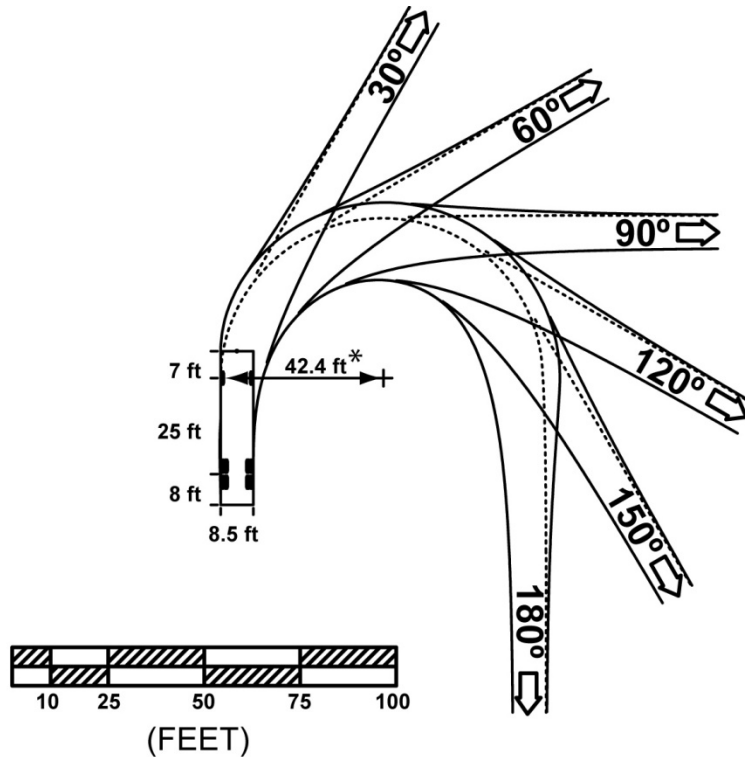


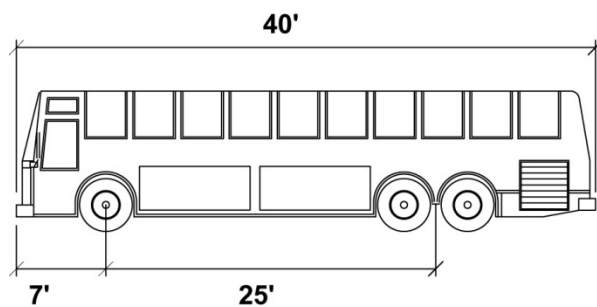


Figure 404.5E

## 40-Foot Bus Design Vehicle



\* Radius to outside wheel  
at beginning of curve.



## LEGEND

|       |                        |
|-------|------------------------|
| ————— | Swept Width (Body)     |
| ----- | Tracking Width (Tires) |

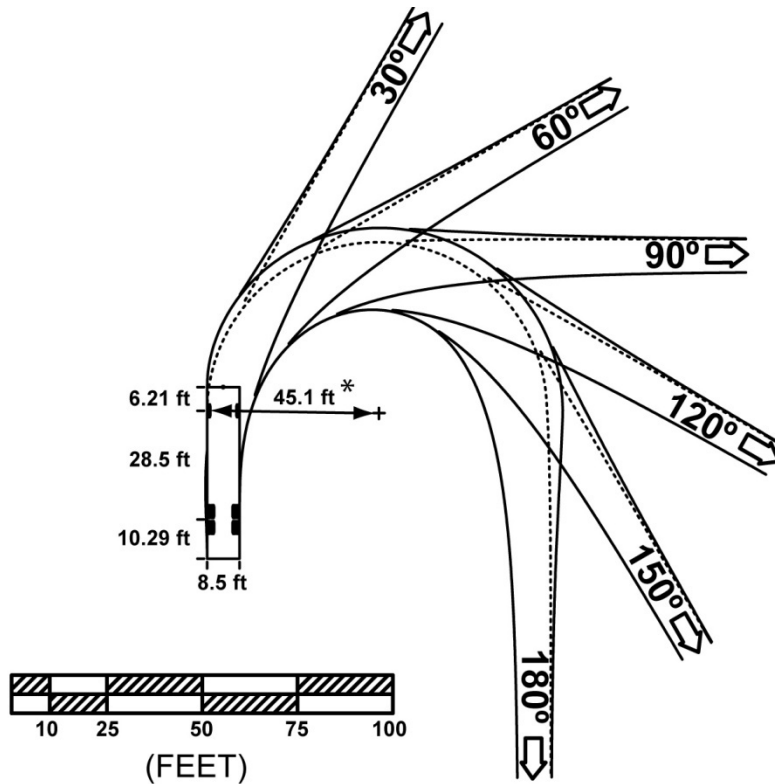
## 40' BUS

Width : 8.5'  
 Track : 8.5'  
 Lock to Lock Time : 6 seconds  
 Steering Lock Angle: 41.0 degrees

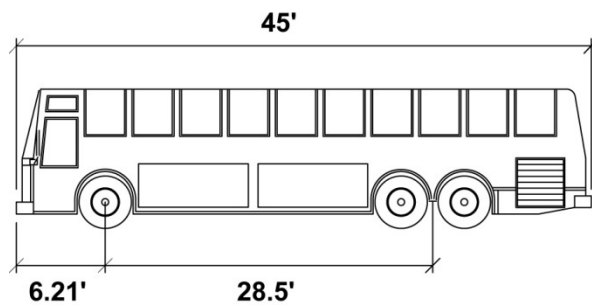
Note: For definitions, see  
Indexes 404.1 and 404.5.

Figure 404.5F

## 45-Foot Bus &amp; Motorhome Design Vehicle



\* Radius to outside wheel  
at beginning of curve.



## 45' BUS

Width : 8.5'  
Track : 8.5'  
Lock to Lock Time : 6 seconds  
Steering Lock Angle: 44.3 degrees

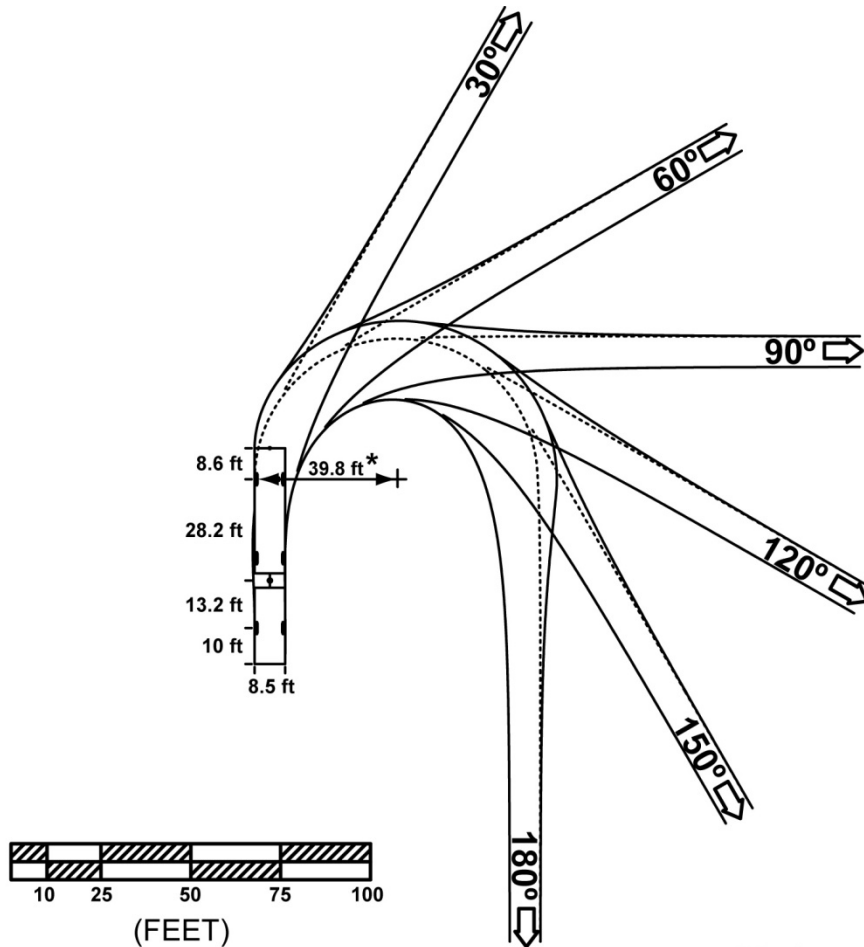
## LEGEND

|       |                        |
|-------|------------------------|
| ————— | Swept Width (Body)     |
| ----- | Tracking Width (Tires) |

Note: For definitions, see  
Indexes 404.1, and 404.5.

Figure 404.5G

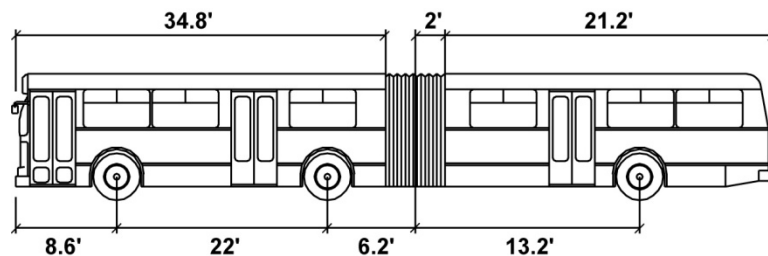
## 60-Foot Articulated Bus Design Vehicle



\* Radius to outside wheel  
at beginning of curve.

## LEGEND

|  |                        |
|--|------------------------|
|  | Swept Width (Body)     |
|  | Tracking Width (Tires) |



## ARTICULATED BUS

|                     |                |
|---------------------|----------------|
| Width               | : 8.5'         |
| Track               | : 8.5'         |
| Lock to Lock Time   | : 6 seconds    |
| Steering Lock Angle | : 38.3 degrees |
| Articulating Angle  | : 50.0 degrees |

Note: For definitions, see  
Indexes 404.1 and 404.5.

- (4) *Trailer Track* – Semitrailer axle width, measured from outside face of tires.
- (5) *Lock To Lock Time* - The time in seconds that an average driver would take under normal driving conditions to turn the steering wheel of a vehicle from the lock position on one side to the lock position on the other side. The default in AutoTurn software is 6 seconds.
- (6) *Steering Lock Angle* - The maximum angle that the steering wheels can be turned. It is further defined as the average of the maximum angles made by the left and right steering wheels with the longitudinal axis of the vehicle.
- (7) *Articulating Angle* - The maximum angle between the tractor and semitrailer.

## Topic 405 - Intersection Design Standards

### 405.1 Sight Distance

- (1) *Stopping Sight Distance*. See Index 201.1 for minimum stopping sight distance requirements.
- (2) *Corner Sight Distance*.

- (a) General--At unsignalized intersections a substantially clear line of sight should be maintained between the driver of a vehicle, bicyclist or pedestrian stopped on the minor road and the driver of an approaching vehicle on the major road that has no stop. Line of sight for all users should be included in right of way, in order to preserve sight lines.

Adequate time should be provided for the stopped vehicle on the minor road to either cross all lanes of through traffic, cross the near lanes and turn left, or turn right, without requiring through traffic to radically alter their speed. The visibility required for these maneuvers form a clear sight triangle with the corner sight distance  $b$  and the crossing distance  $a_1$  or  $a_2$  (see Figure 405.1 as an example of corner sight distance at a two-lane, two-way highway). Dimensions  $a_1$  and  $a_2$  are measured from the decision point to the center of the lane. The actual number of lanes will vary on the major and minor roads. There should be no

sight obstruction within the clear sight triangle.

The methodology used for the driver on the minor road that is stopped to complete the necessary maneuver while the approaching vehicle travels at the design speed of the major road is based on gap-acceptance behavior. A 7-1/2 second criterion is applied to a passenger car (including pickup trucks) for a left turn from a stop on the minor road. However, this time gap does not account for a single-unit truck (no semitrailer), a combination truck (see Index 404.4 for truck tractor-semi-trailer guidance), a right-turn from a stop, or for a crossing maneuver. See Table 405.1A for the time gap that addresses these situations for the assumed design vehicle making these maneuvers from the minor road.

In determining corner sight distance, a set back distance for the vehicle waiting on the minor road must be assumed as measured from the edge of traveled way of the major road. Set back for the driver of the vehicle on the minor road should be a minimum of 10 feet plus the shoulder width of the major road but not less than 15 feet. The location of the driver's eye for the set back is the decision point per Figure 405.1. Corner sight distance and the driver's eye set back are also illustrated in Figures 405.7 and 504.3I. Line of sight for corner sight distance for passenger cars is to be determined from a 3 and 1/2-foot height at the location of the driver of the vehicle in the center of the minor road lane to a 3 and 1/2-foot object height in the center of the approaching outside lane of the major road. This provides for reciprocal sight by both vehicles. The passenger car driver's eye height should be applied to all minor roads. In addition, a truck driver's eye height of 7.6 feet should be applied to the minor road where applicable. Additionally, if the major road has a median barrier, a 2-foot object height should be used to determine the median barrier set back. A median that is wide enough to accommodate a stopped vehicle should also provide a clear sight triangle.

The minimum corner sight distance (feet) should be determined by the equation:  $1.47V_m T_g$ , where  $V_m$  is the design speed (mph) of the major road and  $T_g$  is the time gap (seconds) for the minor road vehicle to enter the major road. The values given in Table 405.1A should be used to determine  $T_g$  based on the design vehicle, the type of maneuver, and whether the stopped vehicle's rear wheels are on an upgrade exceeding 3 percent. The distance from the edge of traveled way to the rear wheels at the minor road stop location should be assumed as: 20 feet for a passenger car, 30 feet for a single-unit truck, and 72 feet for a combination truck.

- (b) Public Road Intersections (Refer to Topic 205)--At unsignalized public road intersections (see Index 405.7) corner sight distance applies.

At signalized intersections the corner sight distances should also be applied whenever possible. Even though traffic flows are designed to move at separate times, unanticipated conflicts can occur due to violation of signal, right turns on red, malfunction of the signal, or use of flashing red/yellow mode.

The minimum value for corner sight distance at signalized intersections should be equal to the stopping sight distance as given in Table 201.1, measured as previously described. This includes an urban driveway that forms a leg of the signalized intersection.

- (c) Private Road Intersections (Refer to Index 205.2) and Rural Driveways (Refer to Index 205.4)--The minimum corner sight distance should be equal to the stopping sight distance as given in Table 201.1, measured as previously described.
- (d) Urban Driveways (Refer to Index 205.3)--Corner sight distance requirements as described above are not applied to urban driveways. If parking is allowed on the major road, parking should be prohibited on

both sides of the driveway per the California MUTCD, 3B.19.

- (3) *Decision Sight Distance.* At intersections where the State route turns or crosses another State route, the decision sight distance values given in Table 201.7 should be used. In computing and measuring decision sight distance, the 3.5-foot eye height and the 0.5-foot object height should be used, the object being located on the side of the intersection nearest the approaching driver.

The application of the various sight distance requirements for the different types of intersections is summarized in Table 405.1B.

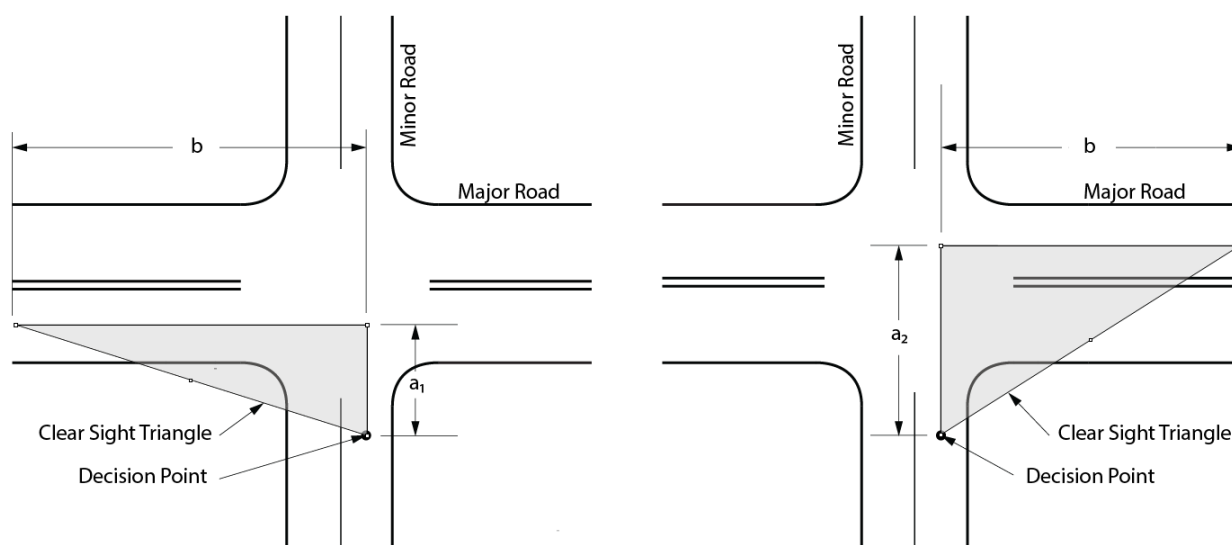
**Table 405.1B**  
**Application of Sight Distance Requirements**

| Intersection Types                                                           | Sight Distance |                  |          |
|------------------------------------------------------------------------------|----------------|------------------|----------|
|                                                                              | Stopping       | Corner           | Decision |
| Private Roads                                                                | X              | X <sup>(1)</sup> |          |
| Public Streets and Roads                                                     | X              | X                |          |
| Signalized Intersections                                                     | X              | X <sup>(2)</sup> |          |
| State Route Intersections & Route Direction Changes, with or without Signals | X              | X                | X        |

NOTES:

- (1) Per Index 405.1(2)(c), the minimum corner sight distance shall be equal to the stopping sight distance as given in Table 201.1. See Index 405.1(2)(a) for setback requirements.
- (2) Apply corner sight distance requirements at signalized intersections whenever possible due to unanticipated violations of the signals or malfunctions of the signals. See Index 405.1(2)(b).
- (4) *Acceleration Lanes for Turning Moves onto State Highways.* At rural intersections, with "STOP" control on the local cross road, acceleration lanes for left and right turns onto the State facility should be considered. At a minimum, the following features should be

**Figure 405.1**  
**Corner Sight Distance**



**Table 405.1A**  
**Corner Sight Distance Time Gap ( $T_g$ )**  
**for Unsignalized Intersections**

| Design Vehicle                   | Left-turn from Stop (s) | Right-turn from Stop and Crossing Maneuver (s) |
|----------------------------------|-------------------------|------------------------------------------------|
| <b>Passenger Car</b>             | 7½                      | 6½                                             |
| Private Road Intersection        |                         |                                                |
| Rural Driveway                   |                         |                                                |
| <b>Single-Unit Truck</b>         | 9½                      | 8½                                             |
| Public Road Intersection         |                         |                                                |
| <b>Combination Truck</b>         | 11½                     | 10½                                            |
| Major and Minor Roads on Routes: |                         |                                                |
| National Network                 |                         |                                                |
| Terminal or Service Access       |                         |                                                |
| California Legal                 |                         |                                                |
| KPRA Advisory                    |                         |                                                |

Notes: Time gaps are for a stopped vehicle to turn left, right or cross a two-lane highway with no median and with minor road grades of 3 percent or less. The table values should be adjusted as follows:

- (1) For multilane highways—When crossing or making a left-turn onto a two-way major road with more than two lanes, add 0.5 s for passenger cars or 0.7 s for trucks for each additional lane to be crossed. Median widths should be converted to an equivalent number of lanes in applying the 0.5 s and 0.7 s criteria. For example, an 18-foot wide median is equivalent to 1.5 lanes; this requires an additional 0.75 s for a passenger car to cross or an additional 1.05 s for a truck to cross.
- (2) For minor road approach grades—If the minor road approach grade is an upgrade that exceeds 3 percent and the rear wheels of the design vehicle are on the grade exceeding 3 percent, add 0.2 s for each percent grade for left-turns; or add 0.1 s for each percent grade for right-turns and crossing maneuvers. For example, a passenger car is turning right from a minor road and at the stop location its rear wheels are on a 4 percent upgrade; this requires an additional 0.4 s for the right-turn.
- (3) Unique situations may necessitate a different design vehicle for a particular minor road than those listed here (e.g., predominant combination trucks out of a rural driveway). Additionally, for intersections at skewed angles less than 60 degrees, a further adjustment is needed. See the AASHTO “A Policy on Geometric Design of Highways and Streets” for guidance.

evaluated for both the major highway and the cross road:

- divided versus undivided
- number of lanes
- design speed
- gradient
- lane, shoulder and median width
- traffic volume and composition of highway users, including trucks and transit vehicles
- turning volumes
- horizontal curve radii
- sight distance
- proximity of adjacent intersections
- types of adjacent intersections

For additional information and guidance, refer to AASHTO, A Policy on Geometric Design of Highways and Streets, the District Traffic Engineer or designee, the District Design Liaison, and the Project Delivery Coordinator.

## 405.2 Left-turn Channelization

- (1) *General.* The purpose of a left-turn lane is to expedite the movement of through traffic by, controlling the movement of turning traffic, increasing the capacity of the intersection, and improving safety characteristics.

The District Traffic Branch normally establishes the need for left-turn lanes.

- (2) *Design Elements.*

- (a) Lane Width – **The lane width for both single and double left-turn lanes on State highways shall be 12 feet.**

**For conventional State highways with posted speeds less than or equal to 40 miles per hour and AADTT (truck volume) less than 250 per lane that are in urban, city or town centers (rural main streets), the minimum lane width shall be 11 feet.**

When considering lane width reductions adjacent to curbed medians, refer to Index

303.5 for guidance on effective roadway width, which may vary depending on drivers' lateral positioning and shy distance from raised curbs.

- (b) Approach Taper -- On conventional highways without a median, an approach taper provides space for a left-turn lane by moving traffic laterally to the right. The approach taper is unnecessary where a median is available for the full width of the left-turn lane. Length of the approach taper is given by the formula on Figures 405.2A, B and C.

Figure 405.2A shows a standard left-turn channelization design in which all widening is to the right of approaching traffic and the deceleration lane (see below) begins at the end of the approach taper. This design should be used in all situations where space is available, usually in rural and semi-rural areas or in urban areas with high traffic speeds and/or volumes.

Figures 405.2B and 405.2C show alternate designs foreshortened with the deceleration lane beginning at the 2/3 point of the approach taper so that part of the deceleration takes place in the through traffic lane. Figure 405.2C is shortened further by widening half (or other appropriate fraction) on each side. These designs may be used in urban areas where constraints exist, speeds are moderate and traffic volumes are relatively low.

- (c) Bay Taper -- A reversing curve along the left edge of the traveled way directs traffic into the left-turn lane. The length of this bay taper should be short to clearly delineate the left-turn move and to discourage through traffic from drifting into the left-turn lane. Table 405.2A gives offset data for design of bay tapers. In urban areas, lengths of 60 feet and 90 feet are normally used. Where space is restricted and speeds are low, a 60-foot bay taper is appropriate. On rural high-speed highways, a 120-foot length is considered appropriate.
- (d) Deceleration Lane Length -- Design speed of the roadway approaching the intersection



should be the basis for determining deceleration lane length. It is desirable that deceleration take place entirely off the through traffic lanes. Deceleration lane lengths are given in Table 405.2B; the bay taper length is included. Where partial deceleration is permitted on the through lanes, as in Figures 405.2B and 405.2C, design speeds in Table 405.2B may be reduced

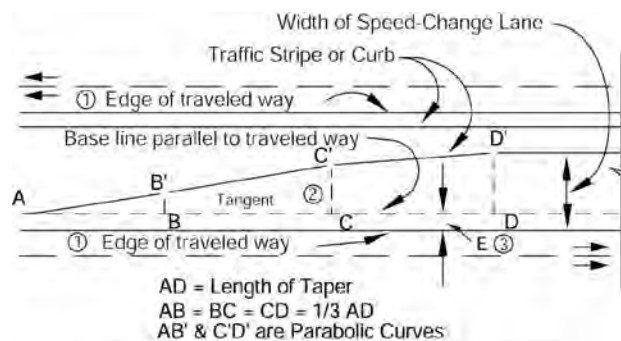
10 miles per hour to 20 miles per hour for a lower entry speed. In urban areas where cross streets are closely spaced and deceleration lengths cannot be achieved, the District Traffic Branch should be consulted for guidance.

- (e) **Storage Length** -- At unsignalized intersections, storage length may be based on the number of turning vehicles likely to arrive in an average 2-minute period during the peak hour. At a minimum, space for 2 vehicles should be provided at 25 feet per vehicle. If the peak hour truck traffic is 10 percent or more, space for at least one passenger car and one truck should be provided. Bus usage may require a longer storage length and should be evaluated if their use is anticipated.

At signalized intersections, the storage length may be based on one and one-half to two times the average number of vehicles that would store per signal cycle depending on cycle length, signal phasing, and arrival and departure rates. At a minimum, storage length should be calculated in the same manner as unsignalized intersection. The District Traffic Branch should be consulted for this information.

When determining storage length, the end of the left-turn lane is typically placed at least 3 feet, but not more than 30 feet, from the nearest edge of shoulder of the intersecting roadway. Although often set by the placement of a crosswalk line or limit line, the end of the storage lane should always be located so that the appropriate turning template can be accommodated.

**Table 405.2A**  
**Bay Taper for Median**  
**Speed-change Lanes**



| LENGTH OF<br>TAPER - feet |      |      |
|---------------------------|------|------|
| 60                        | 90   | 120  |
| Distance From Point "A"   |      |      |
| 5                         | 7.5  | 10.0 |
| 10                        | 15.0 | 20.0 |
| 15                        | 22.5 | 30.0 |
| B'                        | 20   | 30.0 |
|                           | 30   | 45.0 |
| C'                        | 40   | 60.0 |
|                           | 45   | 67.5 |
|                           | 50   | 75.0 |
|                           | 55   | 82.5 |
|                           | 60   | 90.0 |

| OFFSET<br>DISTANCE |              |              |
|--------------------|--------------|--------------|
| DD' =<br>10'       | DD' =<br>11' | DD' =<br>12' |
| 0.00               | 0.00         | 0.00         |
| 0.16               | 0.17         | 0.19         |
| 0.62               | 0.69         | 0.75         |
| 1.41               | 1.55         | 1.69         |
| B                  | 2.50         | 2.75         |
|                    | 5.00         | 5.50         |
|                    | 7.50         | 8.25         |
| C                  | 8.59         | 9.45         |
|                    | 9.38         | 10.31        |
|                    | 9.84         | 10.83        |
|                    | 10.00        | 11.00        |

**NOTES:**

- (1) The table gives offsets from a base line parallel to the edge of traveled way at intervals measured from point "A". Add "E" for measurements from edge of traveled way.
- (2) Where edge of traveled way is a curve, neither base line nor taper between B & C will be a tangent. Use proportional offsets from B to C.
- (3) The offset "E" is usually 2 ft along edge of traveled way for curbed medians; Use "E" = 0 ft. for striped medians.

**Table 405.2B**  
**Deceleration Lane Length**

| Design Speed<br>(mph) | Length to<br>Stop (ft) |
|-----------------------|------------------------|
| 30                    | 235                    |
| 40                    | 315                    |
| 50                    | 435                    |
| 60                    | 530                    |

- (3) *Double Left-turn Lanes.* At signalized intersections on multilane conventional highways and on multilane ramp terminals, double left-turn lanes should be considered if the left-turn demand is 300 vehicles per hour or more. The lane widths and other design elements of left-turn lanes given under Index 405.2(2) applies to double as well as single left-turn lanes.

The design of double left-turn lanes can be accomplished by adding one or two lanes in the median. See "Complete Intersections: A Guide to Reconstructing Intersections and Interchanges for Bicyclists and Pedestrians", published by Headquarters, Division of Traffic Operations, for the various treatments of double left-turn lanes.

- (4) *Two-way Left-turn Lane (TWLTL).* The TWLTL consists of a striped lane in the median of an arterial and is devised to address the special capacity and safety problems associated with high-density strip development. It can be used on 2-lane highways as well as multilane highways. Normally, the District Traffic Operations Branch should determine the need for a TWLTL.

**The minimum width for a TWLTL shall be 12 feet (see Index 301.1).** The preferred width is 14 feet. Wider TWLTL's are occasionally provided to conform with local agency standards. However, TWLTL's wider than 14 feet are not recommended, and in no case should the width of a TWLTL exceed 16 feet. Additional width may encourage drivers in opposite directions to use the TWLTL simultaneously.

### 405.3 Right-turn Channelization

- (1) *General.* For right-turning traffic, delays are less critical and conflicts less severe than for left-turning traffic. Nevertheless, right-turn lanes can be justified on the basis of capacity, analysis, and crash experience.

In rural areas a history of high speed rear-end collisions may warrant the addition of a right-turn lane.

In urban areas other factors may contribute to the need such as:

- High volumes of right-turning traffic causing backup and delay on the through lanes.
- Conflicts between crossing pedestrians and right-turning vehicles and bicycles.
- Frequent rear-end and sideswipe collisions involving right-turning vehicles.

Where right-turn channelization is proposed, lower speed right-turn lanes should be provided to reduce the likelihood of conflicts between vehicles, pedestrians, and bicyclists.

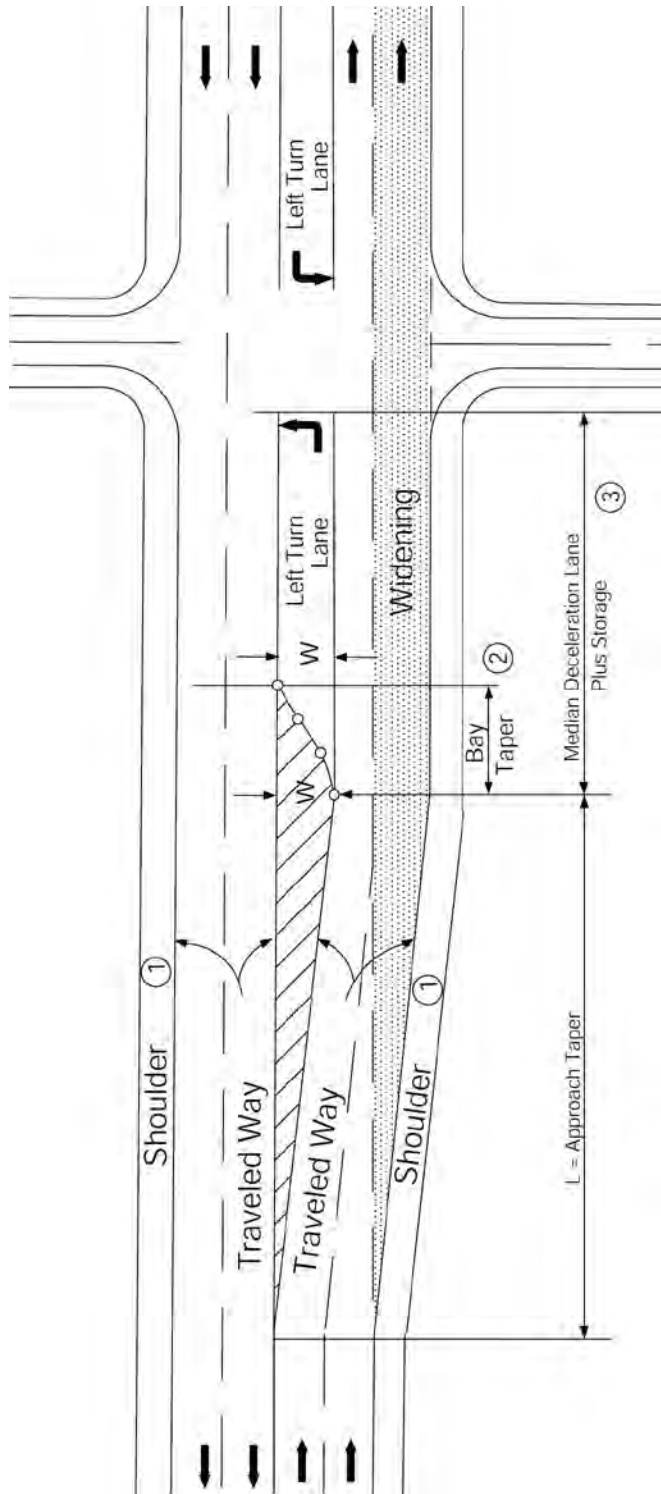
#### (2) *Design Elements.*

- (a) Lane and Shoulder Width--**Index 301.1 shall be used for right-turn lane width requirements. Shoulder width shall be a minimum of 4 feet.** Although not desirable, lane and shoulder widths less than those given above can be considered for right-turn lanes under the following conditions pursuant to Index 82.2:

- In urban, city or town centers (rural main streets) with posted speeds less than 40 miles per hour in severely constrained situations, if truck or bus use is low, consideration may be given to reducing the right-turn lane width to 10 feet.
- Shoulder widths may also be considered for reduction under constricted situations. Whenever possible, at least a 2-foot shoulder should be provided where the right-turn lane is adjacent to a curb. Entire omission of the shoulder should only be considered in constrained situations and where an 11-foot lane can be constructed.

Gutter pans can be included within a shoulder, but cannot be included as part of the travel lane width. Additional right of way for a future right-turn lane should be considered when an intersection is being designed.

**Figure 405.2A**  
**Standard Left-turn Channelization**



**EQUATION:**  $L = \text{Use } WV, \text{ for } V \geq 45 \text{ mph}^{(4)}$   
 Or  $WV^2/60, \text{ for } V < 45 \text{ mph}$

Where  $L$  = Length of Approach Taper - feet

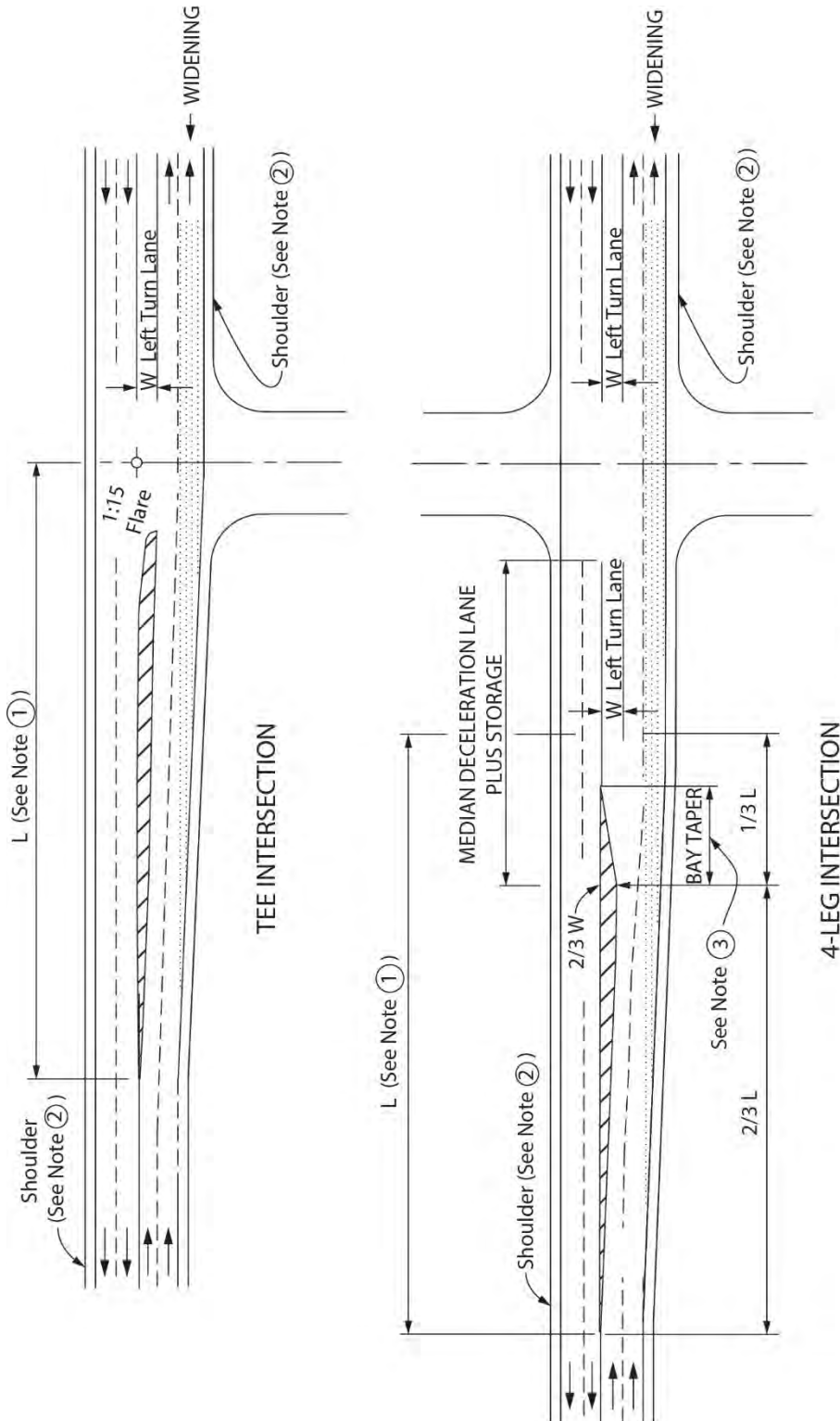
$V$  = Design Speed - mph

$W$  = Width of Median Lane - feet

**NOTES:**

- ① Where width is restricted, shoulder width may be reduced and parking restricted with an approved design exception pursuant to Index 82.2.  
For bicycle use, a minimum 4-foot shoulder is required (5-foot if gutter is present).
- ② Bay taper length = 60 feet to 120 feet. (See Table 405.2A)
- ③ For deceleration lane length see Table 405.2B.
- ④ Where both sides of roadway are widened, use a fraction of "W" that is proportional to widening on each side.

**Figure 405.2B**  
**Minimum Median Left-turn Channelization**  
**(Widening on one Side of Highway)**



#### EQUATION

Use  $WV$ , for  $V \geq 45\text{mph}$

$L =$  Or  $WV^2/60$ , for  $V < 45\text{mph}$

Where:

$L$  = Length of Transition - feet

$W$  = Width of Median Lane - feet

$V$  = Design Speed - mph

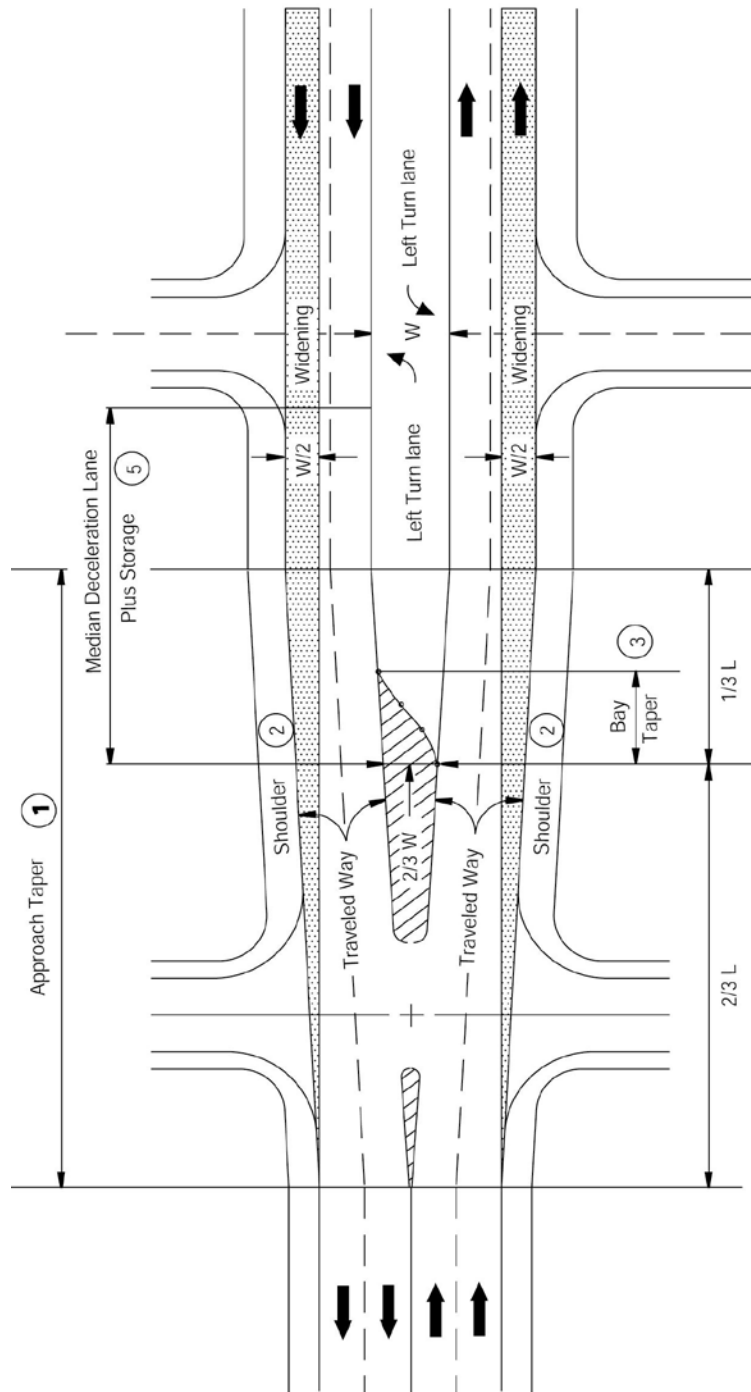
#### NOTES:

①  $L$  = 500 feet Maximum

② Where width is restricted, shoulder width may be reduced and parking restricted with an approved design exception pursuant to Index 82.2. For bicycle use, a minimum 4-foot shoulder is required (5-foot if gutter is required)

③ Bay Taper Length 60 feet to 120 feet (See Table 405.2A)

**Figure 405.2C**  
**Minimum Median Left-turn Channelization**  
**(Widening on Both Sides in Urban Areas with Short Blocks)**



**NOTES:**

- ① L = 500 feet Maximum
- ② Where width is restricted, shoulder width may be reduced and parking restricted with an approved design exception pursuant to Index 82.2. For bicycle use, a minimum 4 feet shoulder is required (5 feet if gutter is present).
- ③ Bay taper length = 60 feet to 120 feet. (See Table 405.2A)
- ④ Assumes equal widening each side. Where widening is unequal, use a fraction that is proportional to widening on each side.
- ⑤ For deceleration lane length see Table 405.2B.

**EQUATION: (4)**

$$L = \begin{cases} \text{Use } (1/2)WV, & \text{for } V \geq 45\text{mph} \\ \text{Or } WV^2/120, & \text{for } V < 45\text{mph} \end{cases}$$

Where L = Length of Approach Taper - feet  
W = Width of Median Lane - feet  
V = Design Speed - mph

- (b) Curve Radius--Where pedestrians are allowed to cross a free right-turning roadway, the curve radius should be such that the operating speed of vehicular traffic is no more than 20 miles per hour at the pedestrian crossing. See NCHRP Report 672, "Roundabouts: An Informational Guide" for guidance on the determination of design speed (fastest path) for turning vehicles. See Index 504.3(3) for additional information.
- (c) Tapers--Approach tapers are usually unnecessary since main line traffic need not be shifted laterally to provide space for the right-turn lane. If, in some rare instances, a lateral shift were needed, the approach taper would use the same formula as for a left-turn lane.  
  
Bay tapers are treated as a mirror image of the left-turn bay taper.
- (d) Deceleration Lane Length--The conditions and principles of left-turn lane deceleration apply to right-turn deceleration. Where full deceleration is desired off the high-speed through lanes, the lengths in Table 405.2B should be used. Where partial deceleration is permitted on the through lanes because of limited right of way or other constraints, average running speeds in Table 405.2B may be reduced 10 miles per hour to 20 miles per hour for a lower entry speed. For example, if the main line speed is 50 miles per hour and a 10 miles per hour deceleration is permitted on the through lanes, the deceleration length may be that required for 40 miles per hour.
- (e) Storage Length--Right-turn storage length is determined in the same manner as left-turn storage length. See Index 405.2(2)(e).
- (3) *Right-turn Lanes at Off-ramp Intersections.* Diamond off-ramps with a free right-turn at the local street and separate right-turn off-ramps around the outside of a loop will likely cause conflict as traffic volumes increase. Serious conflicts occur when the right-turning vehicle must weave across multiple lanes on the local street in order to turn left at a major cross street close to the ramp terminal. Furthermore, free

right-turns create sight distance issues for pedestrians and bicyclists crossing the off-ramp, or pedestrians crossing the local road. Also, rear-end collisions can occur as right-turning drivers slow down or stop waiting for a gap in local street traffic. Free right-turns usually end up with "YIELD", "STOP", or signal controls thus defeating their purpose of increasing intersection capacity.

#### 405.4 Traffic Islands

A traffic island is an area between traffic lanes for channelization of bicycle and vehicle movements or for pedestrian refuge. An island may be defined by paint, raised pavement markers, curbs, pavement edge, or other devices. The California MUTCD should be referenced when considering the placement of traffic islands at signalized and unsignalized locations. For splitter island guidance at roundabouts, see Index 405.10(13).

Traffic islands usually serve more than one function. These functions may be:

- (a) Channelization to confine specific traffic movements into definite channels;
- (b) Divisional to separate traffic moving in the same or opposite direction; and
- (c) Refuge, to aid users crossing the roadway.

Generally, islands should present the least potential conflict to approaching or crossing bicycles and vehicles, and yet perform their intended function.

- (1) *Design of Traffic Islands.* Island sizes and shapes vary from one intersection to another. They should be large enough to command attention. Channelizing islands should not be less than 50 square feet in area, preferably 75 square feet. Curbed, elongated divisional median islands should not be less than 4 feet wide and 20 feet long. All traffic islands placed in the path of a pedestrian crossing must comply with DIB 82. See the Standard Plans for typical island passageway details.

The approach end of each island should be offset 3 feet to the left and 5 feet to the right of approaching traffic, using standard 1:15 parabolic flares, and clearly delineated so that it does not surprise the motorist or bicyclist. These offsets are in addition to the shoulder

widths shown in Table 302.1. Table 405.4 gives standard parabolic flares to be used in island design. On curved alignment, parabolic flares may be omitted for small triangular traffic islands whose sides are less than 25 feet long.

The approach nose of a divisional island should be highly visible day and night with appropriate use of signs (reflectorized or illuminated) and object markers. The approach nose should be offset 3 feet from the through traffic to minimize accidental impacts.

- (2) *Delineation of Traffic Islands.* Generally, islands should present the least potential conflict to approaching traffic and yet perform their intended function. See Index 303.2 for appropriate curb type. Islands may be designated as follows:

- (a) Raised paved areas outlined by curbs.
- (b) Flush paved areas outlined by pavement markings.
- (c) Unpaved areas (small unpaved areas should be avoided).

On facilities with posted speeds over 40 miles per hour, the use of any type of curb is discouraged. Where curbs are to be used, they should be located at or outside of the shoulder edge, as discussed in Index 303.5.

In rural areas, painted channelization supplemented with raised pavement markers may be more appropriate than a raised curbed channelization. This design is as forgiving as possible and decreases the consequence of a driver's or bicyclist's failure to detect or recognize the curbed island. Consideration for snow removal operations should be determined where appropriate.

In urban areas, posted speeds less than or equal to 40 miles per hour allow more frequent use of curbed islands. Local agency requirements and matching existing conditions are factors to consider.

- (3) *Pedestrian Refuge*

Pedestrian refuge islands allow pedestrians to cross fewer lanes at a time while judging conflicts separately. They also provide a refuge

so slower pedestrians can wait for a gap in traffic while reducing total crossing distance.

At unsignalized intersections in rural city/town centers (rural main streets), suburban, or urban areas, a pedestrian refuge should be provided between opposing traffic where pedestrians are allowed to cross 2 or more through traffic lanes in one direction of travel, at marked or unmarked crosswalks. Pedestrian islands at signalized crosswalks should be considered, taking into account crossing distance and pedestrian activity. Note that signalized pedestrian crossings must be timed to allow for pedestrians to cross. See the California MUTCD, Chapter 4E, for further guidance.

Traffic islands used as pedestrian refuge are to be large enough to provide a minimum of 6 feet in the direction of pedestrian travel, without exception.

All traffic islands placed in the path of a pedestrian crossing must be accessible, refer to DIB 82 and the Standard Plans for further guidance. An example of a traffic island that serves as a pedestrian refuge is shown on Figure 405.4.

## 405.5 Median Openings

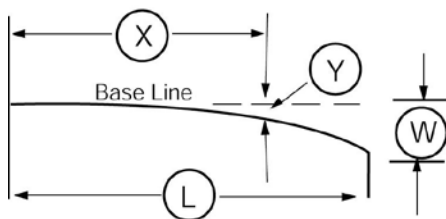
- (1) *General.* Median openings, sometimes called crossovers, provide for crossings of the median at designated locations. Except for emergency passageways in a median barrier, median openings are not allowed on urban freeways.

Median openings on expressways or divided conventional highways should not be curbed except when the median between openings is curbed, or it is necessary for delineation of traffic signal standards and other necessary hardware, or for protection of pedestrians. In these special cases B4 curbs should be used. An example of a median opening design is shown on Figure 405.5.

- (2) *Spacing and Location.* By a combination of interchange ramps and emergency passageways, provisions for access to the opposite side of a freeway may be provided for law enforcement, emergency, and maintenance vehicles to avoid extreme out-of-direction travel. Access should not be more frequent



**Table 405.4**  
**Parabolic Curb Flares Commonly Used**



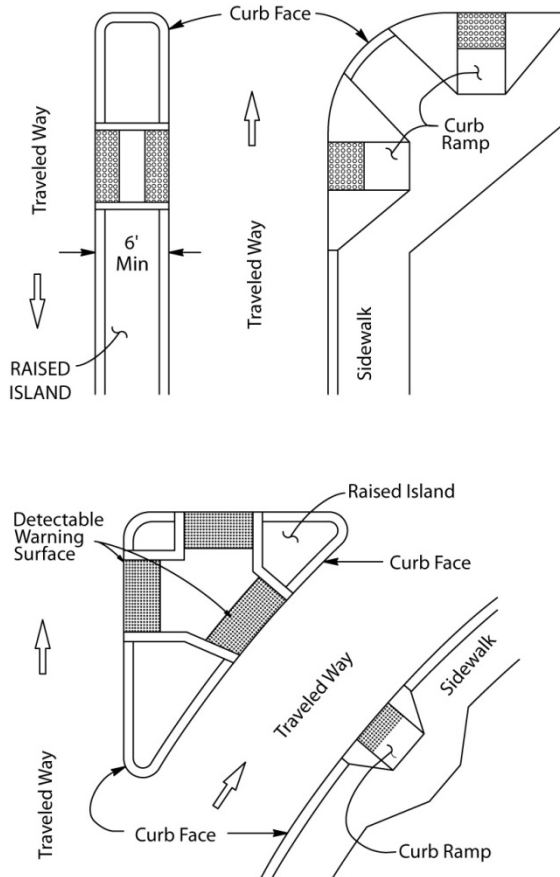
$$Y = \frac{W X^2}{L^2}$$

- (L) = Length of flare in feet  
 (W) = Maximum offset in feet  
 (X) = Distance along base line in feet  
 (Y) = Offset from base line in feet

(W) is shown in table thus  

| OFFSET IN FEET FOR GIVEN "X" DISTANCE                                                  |      |      |      |      |      |      |      |       |      |      |      |      |      |       |      |      |  |
|----------------------------------------------------------------------------------------|------|------|------|------|------|------|------|-------|------|------|------|------|------|-------|------|------|--|
| <div>Distance</div> <div><div>(L)</div><div>(X)</div></div> <div>Length of Flare</div> | 10   | 15   | 20   | 25   | 30   | 40   | 45   | 50    | 60   | 70   | 75   | 80   | 90   | 100   | 110  | 120  |  |
| 1:5 FLARES                                                                             |      |      |      |      |      |      |      |       |      |      |      |      |      |       |      |      |  |
| 25                                                                                     | 0.80 | 1.80 | 3.20 | 5.00 |      |      |      |       |      |      |      |      |      |       |      |      |  |
| 50                                                                                     | 0.40 |      | 1.60 |      | 3.60 | 6.40 |      | 10.00 |      |      |      |      |      |       |      |      |  |
| 1:10 FLARES                                                                            |      |      |      |      |      |      |      |       |      |      |      |      |      |       |      |      |  |
| 50                                                                                     | 0.20 |      | 0.80 |      | 1.80 | 3.20 |      | 5.00  |      |      |      |      |      |       |      |      |  |
| 100                                                                                    | 0.10 |      | 0.40 |      | 0.90 | 1.60 |      | 2.50  | 3.60 | 4.90 |      | 6.40 | 8.10 | 10.00 |      |      |  |
| 1:15 FLARES                                                                            |      |      |      |      |      |      |      |       |      |      |      |      |      |       |      |      |  |
| 45                                                                                     | 0.15 |      | 0.59 |      | 1.33 | 2.37 | 3.00 |       |      |      |      |      |      |       |      |      |  |
| 75                                                                                     | 0.09 |      | 0.36 |      | 0.80 | 1.42 |      | 2.22  | 3.20 | 4.36 | 5.00 |      |      |       |      |      |  |
| 90                                                                                     | 0.07 |      | 0.30 |      | 0.67 | 1.19 |      | 1.85  | 2.67 | 3.63 |      | 4.74 | 6.00 |       |      |      |  |
| 120                                                                                    | 0.06 |      | 0.22 |      | 0.50 | 0.89 |      | 1.39  | 2.00 | 2.72 |      | 3.56 | 4.50 | 5.56  | 6.72 | 8.00 |  |

**Figure 405.4**  
**Pedestrian Refuge Island**



than at three-mile intervals. See Traffic Safety Systems Guidance for additional information on the design of emergency passageways.

Emergency passageways should be located only where decision sight distance is available (see Table 201.7).

Median openings at close intervals on other types of highways create conflicts with high speed through traffic. Median openings should be spaced at intervals no closer than 1600 feet. If a median opening falls within 300 feet of an access opening, it should be placed opposite the access opening.

- (3) *Length of Median Opening.* For any three or four-leg intersection on a divided highway, the length of the median opening should be at least as great as the width of the crossroads pavement, median width, and shoulders. An

important factor in designing median openings is the path of the design vehicle making a minimum left turn at 5 miles per hour to 10 miles per hour. The length of median opening varies with width of median and angle of intersecting road.

Usually a median opening of 60 feet is adequate for 90 degree intersections with median widths of 22 feet or greater. When the median width is less than 22 feet, a median opening of 70 feet is needed. When the intersection angle is other than 90 degrees, the length of median opening should be established by using truck turn templates (see Index 404.3).

- (4) *Cross Slope.* The cross slope in the median opening should be limited to 5 percent. Crossovers on curves with super elevation exceeding 5 percent should be avoided. This cross slope may be exceeded when an existing 2-lane roadbed is converted to a 4-lane divided highway. The elevation of the new construction should be based on the 5 percent cross slope requirement when the existing roadbed is raised to its ultimate elevation.
- (5) *References.* For information related to the design of intersections and median openings, "A Policy on Geometric Design of Highways and Streets," AASHTO, should be consulted.

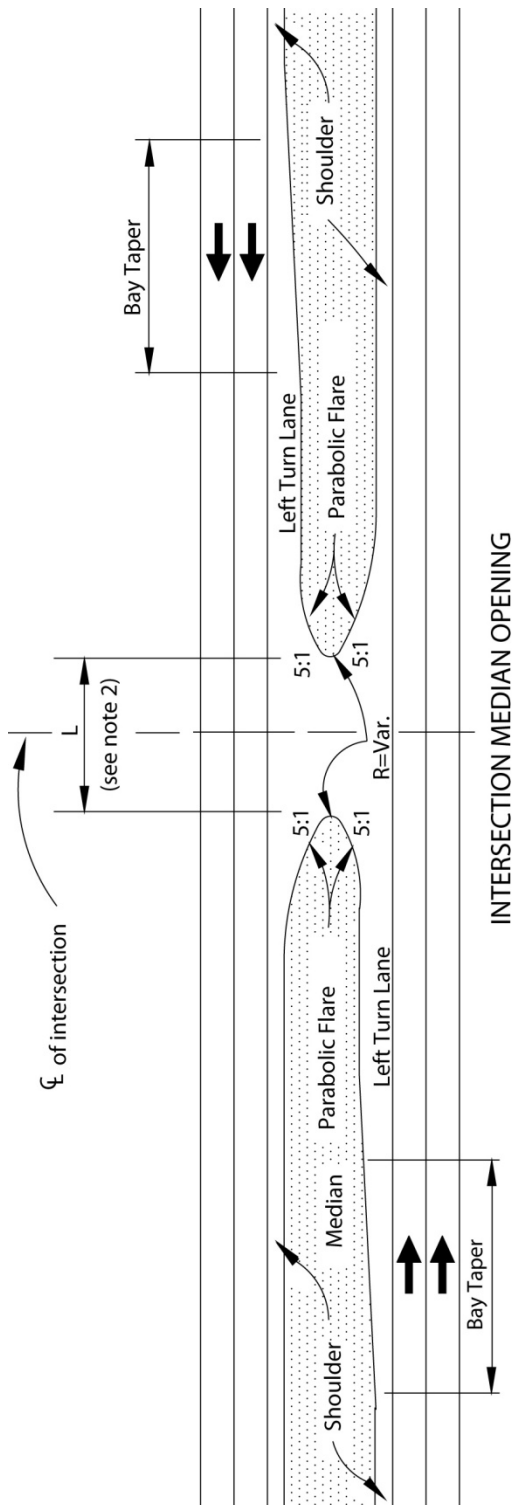
#### 405.6 Access Control

The basic guidance which govern the extent to which access rights are to be acquired at interchanges (see Topic 104, Index 205.1 and 504.8 and the PDPM) also apply to intersections at grade on expressways. Cases of access control which frequently occur at intersections are shown in Figure 405.7. This illustration does not presume to cover all situations. Where required by traffic conditions, access should be extended in order to ensure proper operation of the expressway lanes. Reasonable variations which observe the basic principles referred to above are acceptable.

However, negative impacts on the mobility needs of pedestrians, bicyclists, equestrians, and transit users need to be assessed. Pedestrians and bicyclists are sensitive to additional out of direction travel.

Figure 405.5

## Typical Design for Median Openings



## NOTES:

- ① For length of bay taper, see Table 405.2A.
- ② L = Length of median opening: varies with width of median and angle of intersecting road.  
Usually for 90° intersection, L = 60 feet for median of 22 feet and wider. L = 70 feet for medians narrower than 22 feet.
- ③ See Index 405.2.
- ④ Pedestrian and bicycle features are not shown on figure.

### 405.7 Public Road Intersections

The basic design to be used at right-angle public road intersections on the State Highway System is shown in Figure 405.7. The essential elements are sight distance (see Index 405.1) and the treatment of the right-turn on and off the main highway. Encroachment into opposing traffic lanes by the turning vehicle should be avoided or minimized.

- (1) *Right-turn Onto the Main Highway.* The combination of a circular curve joined by a 2:1 taper on the crossroads and a 75-foot taper on the main highway is designed to fit the wheel paths of the appropriate turning template chosen by the designer.

It is desirable to keep the right-turn as tight as practical, so the “STOP” or “YIELD” sign on the minor leg can be placed close to the intersection.

- (2) *Right-turn Off the Main Highway.* The combination of a circular curve joined by a 150-foot taper on the main highway and a 4:1 taper on the crossroads is designed to fit the wheel paths of the appropriate turning template and to move the rear of the vehicle off the main highway. Deceleration and storage lanes may be provided when necessary (see Index 405.3).

- (3) *Alternate Designs.* Offsets are given in Figure 405.7 for right angle intersections. For skew angles, roadway curvature, and possibly other reasons, variations to the right-angle design are permitted, but the basic rule is still to approximate the wheel paths of the design vehicle.

A three-center curve is an alternate treatment that may be used at the discretion of the designer.

Intersections are major consideration in bicycle path design as well. See Indexes 403.6 and 1003.1(5) for general bicycle path intersection design guidance. Also see Section 5.3 of the AASHTO Guide for the Planning, Design, and Operation of Bicycle Facilities.

### 405.8 City Street Returns and Corner Radii

The pavement width and corner radius at city street intersections is determined by the type of vehicle to be accommodated and the mobility needs of

pedestrians and bicyclists, taking into consideration the amount of available right of way, the types of adjoining land uses, the place types, the roadway width, and the number of lanes on the intersecting street.

At urban intersections, the California truck or the Bus Design Vehicle template may be used to determine the corner radius. Where STAA truck access is allowed, the STAA Design Vehicle template should be used giving consideration to factors mentioned above. See Index 404.3.

Smaller radii of 15 feet to 25 feet are appropriate at minor cross streets where few trucks or buses are turning. Local agency standards may be appropriate in urban and suburban areas.

Encroachment into opposing traffic lanes must be avoided.

### 405.9 Widening of 2-lane Roads at Signalized Intersections

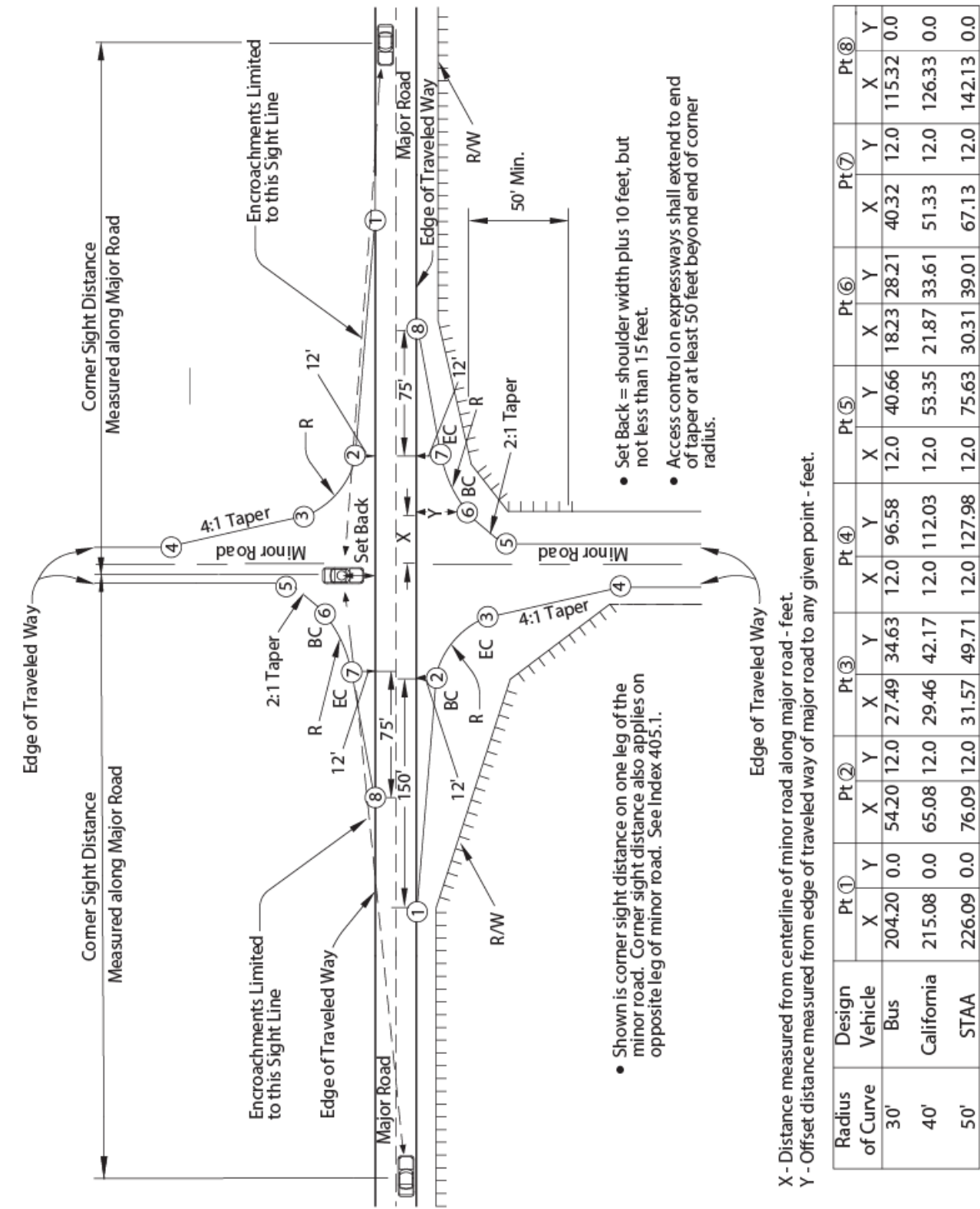
Two-lane State highways may be widened at intersections to 4-lanes whenever signals are installed. Sometimes it may be necessary to widen the intersecting road. The minimum design is shown in Figure 405.9. More elaborate treatment may be warranted by the volume and pattern of traffic movements. Unusual turning movement patterns may possibly call for a different shape of widening.

The impact on pedestrian and bicycle traffic mobility of larger intersections should be assessed before a decision is made to widen an intersection.

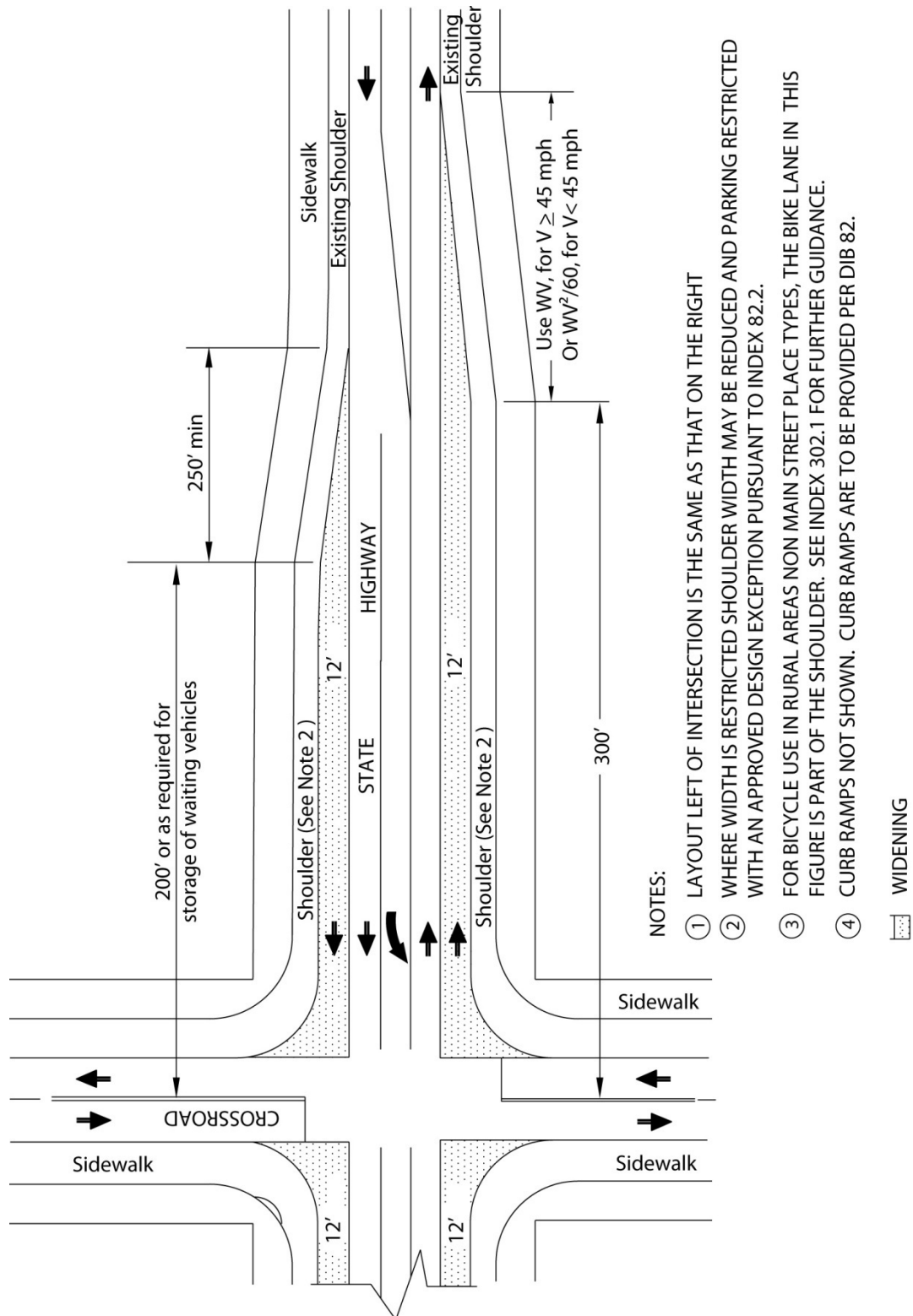
### 405.10 Roundabouts

Roundabout intersections on the State highway system must be developed and evaluated in accordance with National Cooperative Highway Research Program (NCHRP) Report 672 entitled “Roundabouts: An Informational Guide, 2nd ed.” (NCHRP Guide 2) dated October 2010 and Traffic Operations Policy Directive (TOPD) Number 13-02. Also see Index 401.5 for general information and guidance. See Figure 405.10 Roundabout Geometric Elements for nomenclature associated with roundabouts. Signs, striping and markings at roundabouts are to comply with the California MUTCD.

Figure 405.7  
Public Road Intersections



**Figure 405.9**  
**Widening of Two-lane Roads at Signalized Intersections**



A roundabout is a form of circular intersection in which traffic travels counterclockwise around a central island and entering traffic must yield to the circulating traffic. Roundabouts feature, among other things, a central island, a circulatory roadway, and splitter islands on each approach. Roundabouts rely upon two basic and important operating principles:

- (a) Speed reduction at the entry and through the intersection will be achieved through geometric design and,
- (b) The yield-at-entry rule, which requires traffic entering the intersection to yield to traffic that is traveling in the circulatory roadway.

Benefits of roundabouts are:

- Fewer conflict points typically result in fewer collisions with less severity. Over half of vehicle to vehicle points of conflict associated with intersections are eliminated with the use of a roundabout. Additionally, a roundabout separates the points of conflict which eases the ability of the users to identify a conflict and helps prevent conflicts from becoming collisions.
- Roundabouts are designed to reduce the vehicular speeds at intersections. Lower speeds lessens the vehicular collision severity. Likewise, studies indicate that pedestrian and bicyclist collisions with motorized vehicles at lower speeds significantly reduce their severity.
- Roundabouts allow continuous free flow of vehicles and bicycles when no conflicts exist. This results in less noise and air pollution and reduces overall delays at roundabout intersections.

Except as indicated in this Index, the standards elsewhere in this manual do not apply to roundabouts. For the application of design standards, the approach ends of the splitter islands define the boundary of a roundabout intersection, see Figure 405.10. The design standards elsewhere in this manual apply to the approach legs beyond the approach ends of the splitter islands.

#### (1) *Design Period.*

First consider the design of a single lane roundabout per the design period guidance in

Index 103.2. If a second lane is not needed until 10 or more years, it may be better to phase the improvements. Construct the first phase of the roundabout so at the 20-year design period, an additional lane can be easily added. In order to comply with the 20-year design period, the initial project must provide the right of way needed for utility relocations, a shared-use path designed for a Class I Bikeway, and all other features other than pavement, lighting, and striping in their ultimate locations.

In some locations, it may not be practical to build a single lane roundabout that will operate for 10 years. Geometric constraints and other conflicts may preclude widening to the ultimate configuration. In such cases, other intersection configurations or control strategies addressed in Index 401.5 may need to be considered.

When staging improvements, see NCHRP Guide 2, Section 6.12.

#### (2) *Design Vehicles* - See Topic 404.

The turning path for the design vehicle, see Index 404.5, dictates many of the roundabout dimensions. The design vehicle tracking and swept width are to be used when designing all the entries and exits, where design vehicles are unrestricted (see Index 404.2), and the circulatory roadway. The percentage of trucks and their lane utilization is an important consideration on multilane roundabouts when determining if the design will allow trucks to stay within their own lane or encroach into the adjacent lane. If permit vehicles larger than the design vehicle occasionally use the proposed roundabout, they can be accommodated by having removable signs or other removable features in the central island or around the circular path to ensure their swept path can negotiate the roundabout. Roundabouts should not be overdesigned for the occasional permit vehicle.

To accurately simulate the design vehicle swept width traveling through a roundabout, the minimum speed of the design vehicle used in computer simulation software (e.g., Auto



TURN) should be 10 miles per hour through the roundabout.

(3) *Inscribed Circle Diameter.*

At single lane roundabouts, the size of the inscribed circle is largely dependent upon the turning requirements of the design vehicle. The inscribed circle diameter (ICD) must be large enough to accommodate: (a) the STAA design vehicle for all roundabouts on the National Network and on Terminal Access routes; and, (b) the California Legal design vehicle on all non-STAA route intersections on California Legal routes and California Legal KPRA Advisory routes, while maintaining adequate deflection curvature to ensure appropriate travel speeds for smaller vehicles. The design vehicle is to navigate the roundabout with the front tractor wheels off the truck apron, if one is present. Transit vehicles, fire engines and single-unit delivery vehicles are also to be able to navigate the roundabout without using the truck apron, if one is present. The inscribed circle diameter for a single lane roundabout generally ranges between 105 feet to 150 feet to accommodate the California Legal design vehicle and 130 feet to 180 feet to accommodate the STAA design vehicle.

At multilane roundabouts, the inscribed circle diameter is to achieve adequate alignment of the natural vehicle path while maintaining deflection curvature to ensure appropriate travel speeds. To achieve both of these design objectives requires a slightly larger diameter than used for a single lane roundabout. The inscribed circle diameter for a multilane (2-lane) roundabout generally ranges between 150 feet to 220 feet to accommodate the California Legal design vehicle for non-STAA route intersections on California Legal routes and California Legal KPRA Advisory routes, and 165 feet to 220 feet to accommodate the STAA design vehicle for roundabouts on the National Network and on Terminal Access routes. Similar to a single lane roundabout, the design vehicle is to be able to navigate a multilane roundabout with the front tractor wheels staying off the truck apron, if one is present. Transit vehicles, fire engines and single-unit delivery vehicles are also to be able

to navigate the roundabout without using the truck apron, if one is present.

The inscribed diameter ranges given above are typical values, design may be larger or smaller. Site location constraints and performance checks will determine if the diameter is appropriate for the location.

(4) *Entry Speeds.*

Lowering the speed of vehicles entering and traveling through the roundabout is a primary design objective that is achieved by approach alignment and entry geometry.

The following entry speeds should not be exceeded:

- Single lane entry, 25 miles per hour.
- Multilane entry, 30 miles per hour.

A bypass lane is not included in the number of entry lanes. A bypass prohibits entry into the circulatory roadway.

Entry speeds are to be determined through fastest path analysis. Fastest path is the smoothest, flattest path possible for a single vehicle in the absence of other traffic and ignoring all lane markings. The fastest path analysis should begin at least 165 feet from the inscribed circle diameter and should not bring the path closer than 3 feet from a stripe nor 5 feet from the face of a curb. These distances are minimums and the fastest path may occur further away from the curbs and striping depending on the roundabout configuration. For fastest path evaluation, see NCHRP Guide 2, Section 6.7.1.

(5) *Exit Design.*

Similar to entry design, exit design flexibility is required to achieve the optimal balance between competing design variables and project objectives to provide adequate capacity and, essentially, safety while minimizing excessive property impacts and costs. Thus, the selection of a curved versus tangential design is to be based upon the balance of each of these criteria. Exit design is influenced by the place type, pedestrian demand, bicyclist needs, the design vehicle

and physical constraints. The exit curb radii are usually larger than the entry curb radii in order to minimize the likelihood of congestion and crashes at the exits. However, the desire to minimize congestion at the exits needs to be balanced with the need to maintain an appropriate operating speed through the pedestrian crossing. Therefore, the exit path radius should not be significantly greater than the circulating path radius to ensure low speeds are maintained at the pedestrian crossing.

(6) *Number of Legs Serving the Roundabout.*

Intersections with more than four legs are often difficult to manage operationally. Roundabouts are a proven traffic control device in such situations. However, it is necessary to ensure that the design vehicle can maneuver through all unrestricted legs of the roundabout.

(7) *Pedestrian Use.*

Sidewalks around the circular roadway are to be designed as shared-use paths, see Index 405.10(8)(c). However, the guidance in Design Information Bulletin (DIB) 82 Pedestrian Accessibility Guidelines for Highway Projects must also be followed when designing these shared-use facilities around a roundabout. If there is a difference in the standards, the guidance in DIB 82 is to be followed. In addition,

- (a) Pedestrian curb ramps need to be differentiated from bike ramps:
  - The detectable warning surface (truncated domes) differentiates a pedestrian curb ramp from a bicycle ramp.
  - Detectable warning surface is required on curb ramps. They are not to be used on a bike ramp.
- (b) Truck aprons and mountable curbs are not to be placed in the pedestrian crossing areas.
- (c) See the California MUTCD for the signs and markings used at roundabouts.
- (d) At pedestrian crossing locations the accessibility design will be treated as a

midblock pedestrian street crossing. See DIB 82 for more information.

(8) *Bicyclist Use.*

- (a) General. Bicyclists may choose to travel in the circular roadway of a roundabout by taking a lane, while others may decide to travel using the shared-use path to bypass the circular roadway. Therefore, the approach and circular roadways, as well as the shared-use path all need to be designed for the mobility needs of bicyclists. See the California MUTCD for the signs and markings used at roundabouts.
- (b) Bicyclist Use of the Circular Roadway. Single lane roundabouts do not require bicyclists to change lanes in the circular roadway to select the appropriate lane for their direction of travel, so they tend to be comfortable for bicyclists to use. Even two-lane roundabouts, which may have straighter paths of travel that can lead to faster vehicular traveling speeds, appear to be comfortable for bicyclists that prefer to travel like vehicles. Roundabouts that have more than two circular lanes can create complexities in signing and striping (see the California MUTCD for guidance), and their operating speed may cause some bicyclists to decide to bypass the circular roadway and use the bicycle ramp that provides access to the shared-use path around the roundabout.
- (c) Bicyclists Use of the Shared-Use Path. The shared-use path is to be designed using the guidance in Index 1003.1 for Class I Bikeways and in NCHRP Guide 2 Section 6.8.2.2. However, the accessibility guidance in DIB 82 must also be followed when designing these shared-use facilities around a roundabout. If there is a difference in the standards, the accessibility guidance in DIB 82 is to be followed to ensure the facility is accessible to pedestrians with disabilities.

Bicycle ramps are to be located to avoid confusion as curb ramps for pedestrians. Also see Index 405.10(7) for guidance on how to differentiate the two types of ramps.

The design details and width of the ramp are also important to the bicyclist. Bicyclists approaching the bicycle ramp need to be provided the choice of merging left into the lane or moving right to use the bicycle ramp. Bicycle ramps should be placed at a 35 to 45 degree angle to the departure roadway and the sidewalk to enable the bicyclists to use the ramp and discourage bicyclists from entering the shared-use path at a speed that is detrimental to the pedestrians. The shared-use path should be designated as Class I Bikeways; however, appropriate regulatory signs may need to be posted if the local jurisdiction has a law(s) that prohibit bicyclists from riding on a sidewalk.

A landscape buffer or strip between the shared-use/Class I Bikeway and the circular roadway of the roundabout is needed and should be a minimum of 2 feet wide.

Pedestrian crossings may also be used by bicyclists; thus, these shared-use crossings need to be designed for both bicyclist and pedestrian needs.

(9) *Transit Use.*

Transit vehicles and buses will not have difficulty negotiating a roundabout when it has been designed using the California Legal design vehicle or the STAA design vehicle. However, to minimize passenger discomfort, a roundabout should be designed such that the transit vehicle or bus does not use the truck apron, if one is present.

(10) *Stopping Sight Distance and Visibility.*

See Index 201.1 for stopping sight distance guidance at roundabouts.

A domed or mounded central island, between 3.5 to 6 feet high, is needed to focus attention on the approach and through roundabout alignment. A domed central island provides a visual screen from downstream alignment and other distractions and provides a visual cue for vehicles approaching the roundabout.

In high speed environments, additional lighting of, and vertical elements in the central island (i.e., landscaping and esthetic features) may be needed.

(11) *Speed Consistency.*

Consistency in operating speeds between the various movements within the roundabout can minimize collisions between traffic streams. The operating speeds between competing traffic streams and between consecutive geometric elements should be minimized such that the maximum speed differential between them is no more than 15 miles per hour; it is preferred that the operating speed differential be less than 10 miles per hour.

(12) *Path Alignment (Natural Path).*

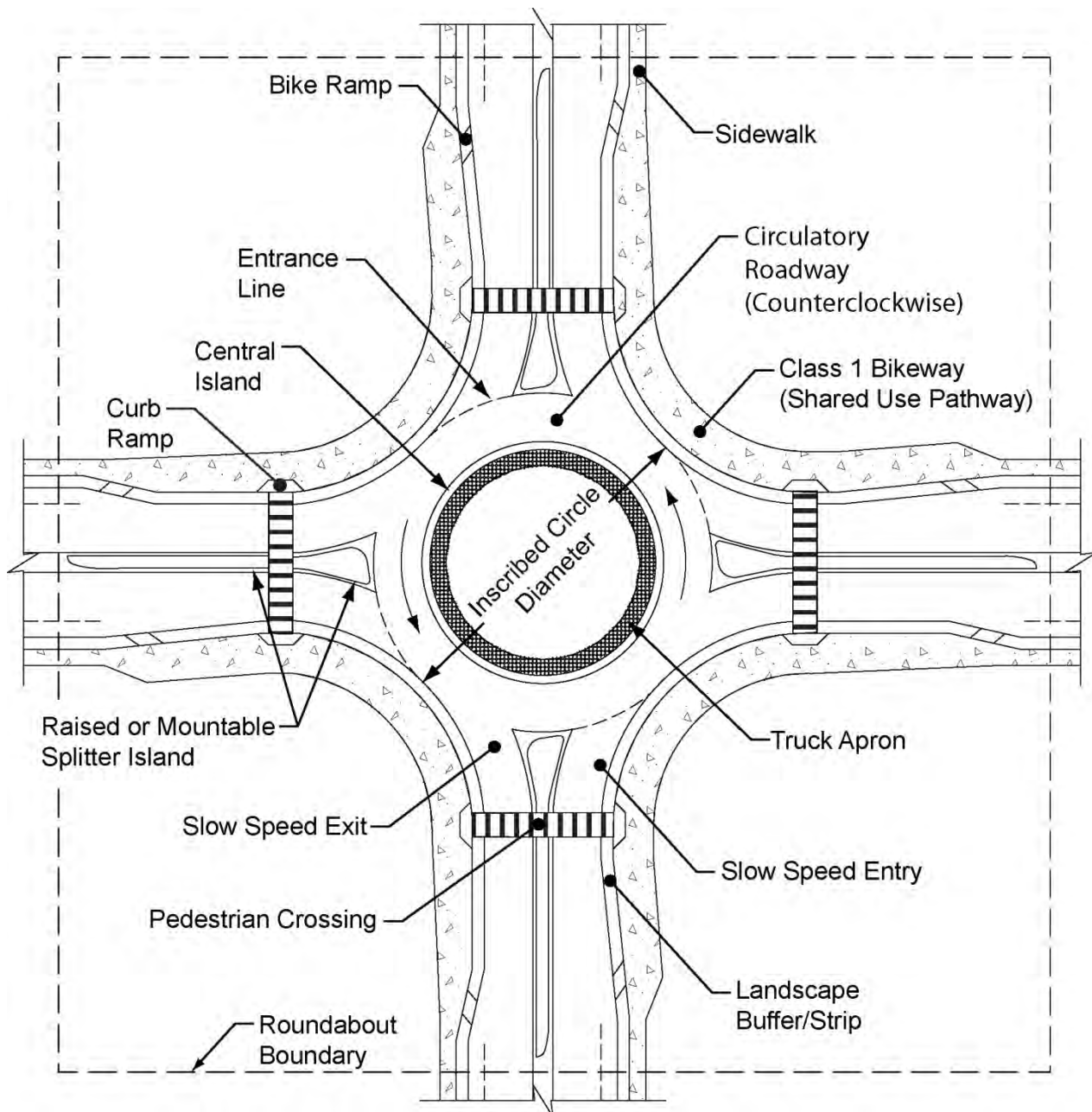
As two traffic streams approach the roundabout in adjacent lanes, drivers and bicyclists will be guided by lane markings up to the entrance line. At the yield point, they will continue along their natural trajectory into the circulatory roadway. The speed and orientation of the design vehicle at the entrance line determines what can be described as its natural path. The geometry of the exits also affects the natural path that the design vehicle travels. The natural path of two vehicles are not to overlap, see NCHRP Guide 2, Section 6.7.2.

(13) *Splitter Islands.*

Splitter islands (also called separator islands, divisional islands, or median islands) will be provided on all roundabouts. The purpose is to provide refuge for pedestrians, assist in controlling speeds, guide traffic into the roundabout, physically separate entering and exiting traffic streams, and deter wrongway movements.

The total length of the raised island should be at least 50 feet although 100 feet is desirable. On higher speed roadways, splitter island lengths of 150 feet or more is beneficial. Additionally, the splitter island should extend beyond the end of the exit curve to prevent

**Figure 405.10**  
**Roundabout Geometric Elements**



**NOTE:**

This figure is provided to only show nomenclature and is not to be used for design details.

exiting traffic from crossing into the path of approaching traffic. The splitter island width should be a minimum of 6 feet at the pedestrian crossing to adequately provide refuge for pedestrians.

Posted speeds on the approach roadway greater than or equal to 45 miles per hour require the splitter island length, as measured from the inscribed circle diameter, to be 200 feet. In some instances, a longer splitter island may be desirable. Concrete curb is to be provided on the right side of the approach roadway equal to the length of the splitter island from the inscribed circle diameter.

*(14) Access Control.*

The access control standards in Index 504.3(3) and 504.8 apply to roundabouts at interchange ramp intersections. The dimensions shown in Index 504.8 are to be measured from the inscribed circle diameter.

Driveways should not be placed within 100 feet from the inscribed circle diameter.

*(15) Lighting.*

Lighting is required at all roundabouts. See NCHRP Report 672 Chapter 8, the Traffic Manual Chapter 9 as well as consult with the District Traffic Safety Engineer.

*(16) Landscaping.*

Landscaping should be designed such that drivers and bicyclists can observe the signing and shape of the roundabout as they approach, allowing adequate visibility for making decisions within the roundabout. The landscaping of the central island can enhance the intersection by making it a focal point, by promoting lower speeds and by breaking the headlight glare of oncoming vehicles or bicycles. It is desirable to create a domed or mounded central island, between 3.5 to 6 feet high, to increase the visibility of the intersection on the approach. Contact the District Landscape Architecture Unit to provide technical assistance in designing the roundabout landscaping.

*(17) Vertical Clearance.*

The vertical clearance guidance provided in Index 309.2 applies to roundabouts.

*(18) Drainage Design.*

See Chapter 800 to 890 for further guidance.

*(19) Maintenance.*

Contact the District Maintenance Engineer and appropriate Regional Manager for maintenance strategies and practices including seasonal operations, maintenance resources, and specialized equipment. Maintenance responsibilities may also include multiple state, county, and city agencies where coordination of maintenance efforts and funding is needed.

Consider maintenance of the central island. Provide a maintenance vehicle pullout within the central island beyond the truck apron, so maintenance vehicles will not conflict with circulating trucks.

*(20) Snow Areas.*

In climate regions where snowfall requires the use of snow removal equipment, consider the equipment to be used. Design ICD's as well as entrance and exit geometry to accommodate snow removal equipment and plow limitations. Check with District Maintenance for their requirements and limitations. Geometric elements to consider that facilitate snow removal are; mountable curb, tapering the ends of curbs down to allow plows to ride over curbs, plowing accommodation in both directions, providing snow storage space within the central island, and providing minimum entry/exit widths to accommodate the plow blade. Mountable curb may be used if sidewalk/shared use path is not contiguous to the curb. Provide a planter or textured pavement between the path and the roadway. Snow storage areas must be designed to prevent snow melt from entering the circulating lanes where it can freeze. Snow storage areas must not block pedestrian paths.

(21) Utilities.

Utility access openings (manholes) should not be located within the traveled way within the boundary of the roundabout. Roundabouts do not have shoulders to accommodate traffic while manholes are accessed. Manholes should not be allowed within the circulating roadway to avoid closing down the intersection during access. If a manhole is absolutely necessary within the boundary of the inscribed diameter, place it in the central island and off of the truck apron. Provide a maintenance vehicle pullout to allow access to the manhole without blocking truck traffic.

Topic 406 - Ramp Intersection Capacity Analysis

The following procedure for ramp intersection analysis may be used to estimate the capacity of any signalized intersection where the phasing is relatively simple. It is useful in analyzing the need for additional turning and through traffic lanes. For a more complete analysis refer to the Highway Capacity Manual.

- (a) Ramp Intersection Analysis--For the typical local street interchange there is usually a critical intersection of a ramp and the crossroads that establishes the capacity of the interchange. The capacity of a point where lanes of traffic intersect is 1500 vehicles per hour. This is expressed as intersecting lane vehicles per hour (ILV/hr). Table 406 gives values of ILV/hr for various traffic flow conditions.

If a single-lane approach at a normal intersection has a demand volume of 1000 vph, for example, then the intersecting single-lane approach volume cannot exceed 500 vph without delay.

The three examples that follow illustrate the simplicity of analyzing ramp intersections using this 1500 ILV/hr concept.

- (b) Diamond Interchange--The critical intersection of a diamond type interchange must accommodate demands of three conflicting travel paths. As traffic volumes approach capacity, signalization will be needed. For the spread diamond (Figure 406A), basic capacity analysis is made on the assumption that

3-phase signalization is employed. For the tight diamond (Figure 406B), it is assumed that 4-phase signal timing is used.

- (c) 2 Quadrant Cloverleaf--Because this interchange design (Figure 406C) permits 2-phase signalization, it will have higher capacities on the approach roadways. The critical intersection is shared two ways instead of three ways as in the diamond case.

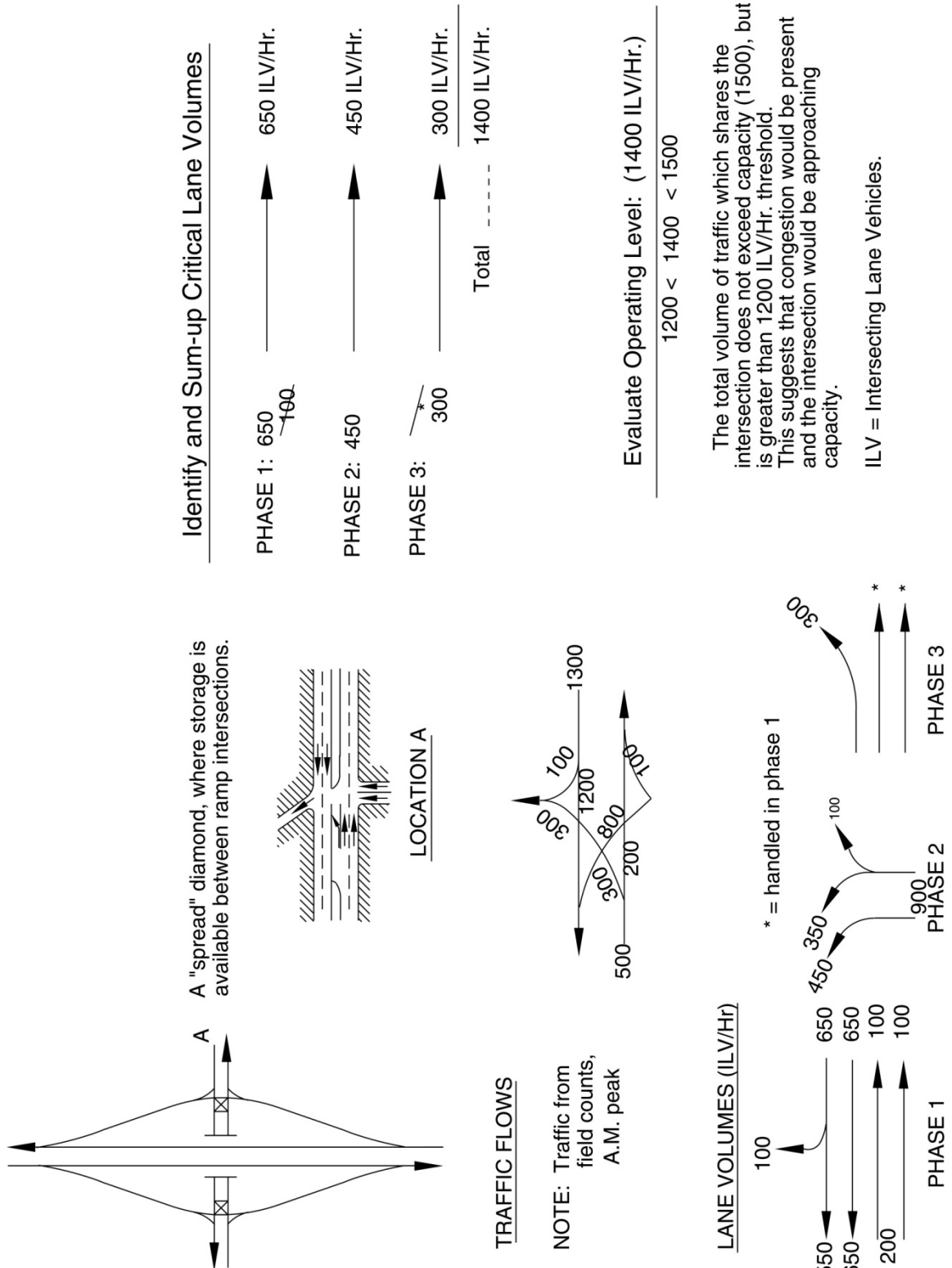
Table 406  
Vehicle Traffic Flow Conditions at Intersections at Various Levels of Operation

| ILV/hr           | Description                                                                                                                                                                                                                                                                                                                           |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| < 1200:          |                                                                                                                                                                                                                                                                                                                                       |
|                  | Stable flow with slight, but acceptable delay. Occasional signal loading may develop. Free midblock operations.                                                                                                                                                                                                                       |
| 1200-1500:       |                                                                                                                                                                                                                                                                                                                                       |
|                  | Unstable flow with considerable delays possible. Some vehicles occasionally wait two or more cycles to pass through the intersection. Continuous backup occurs on some approaches.                                                                                                                                                    |
| 1500 (Capacity): |                                                                                                                                                                                                                                                                                                                                       |
|                  | Stop-and-go operation with severe delay and heavy congestion <sup>(1)</sup> . Traffic volume is limited by maximum discharge rates of each phase. Continuous backup in varying degrees occurs on all approaches. Where downstream capacity is restrictive, mainline congestion can impede orderly discharge through the intersection. |

NOTE:

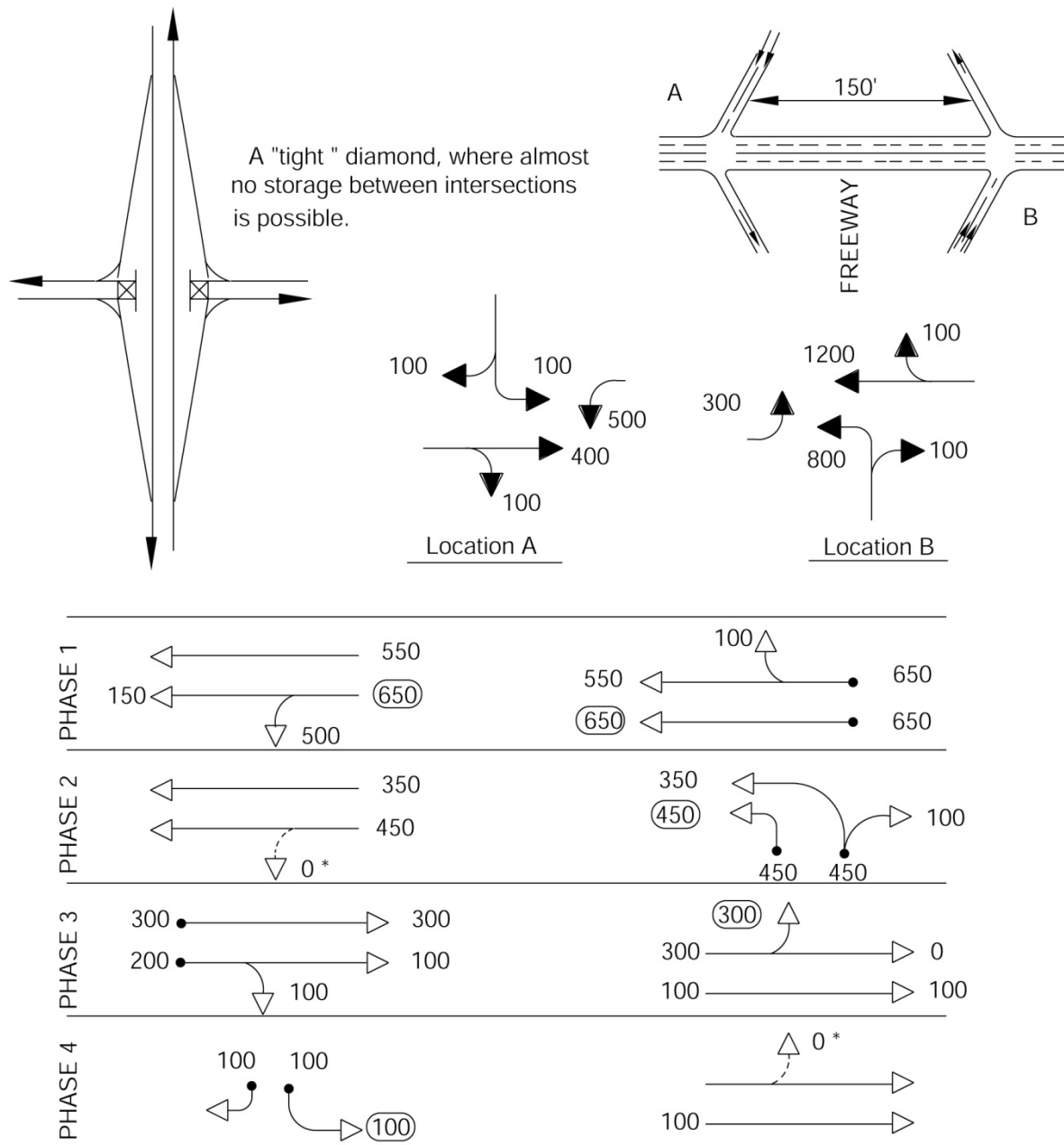
- (1) The amount of congestion depends on how much the ILV/hr value exceeds 1500. Observed flow rates will normally not exceed 1500 ILV/hr, and the excess will be delayed in a queue.

**Figure 406A**  
**Spread Diamond**





**Figure 406B**  
**Tight Diamond**



\*NOTE: When no storage at all is permitted, left-turn movement is cleared during this phase.

Critical Lane Volumes:

650

450

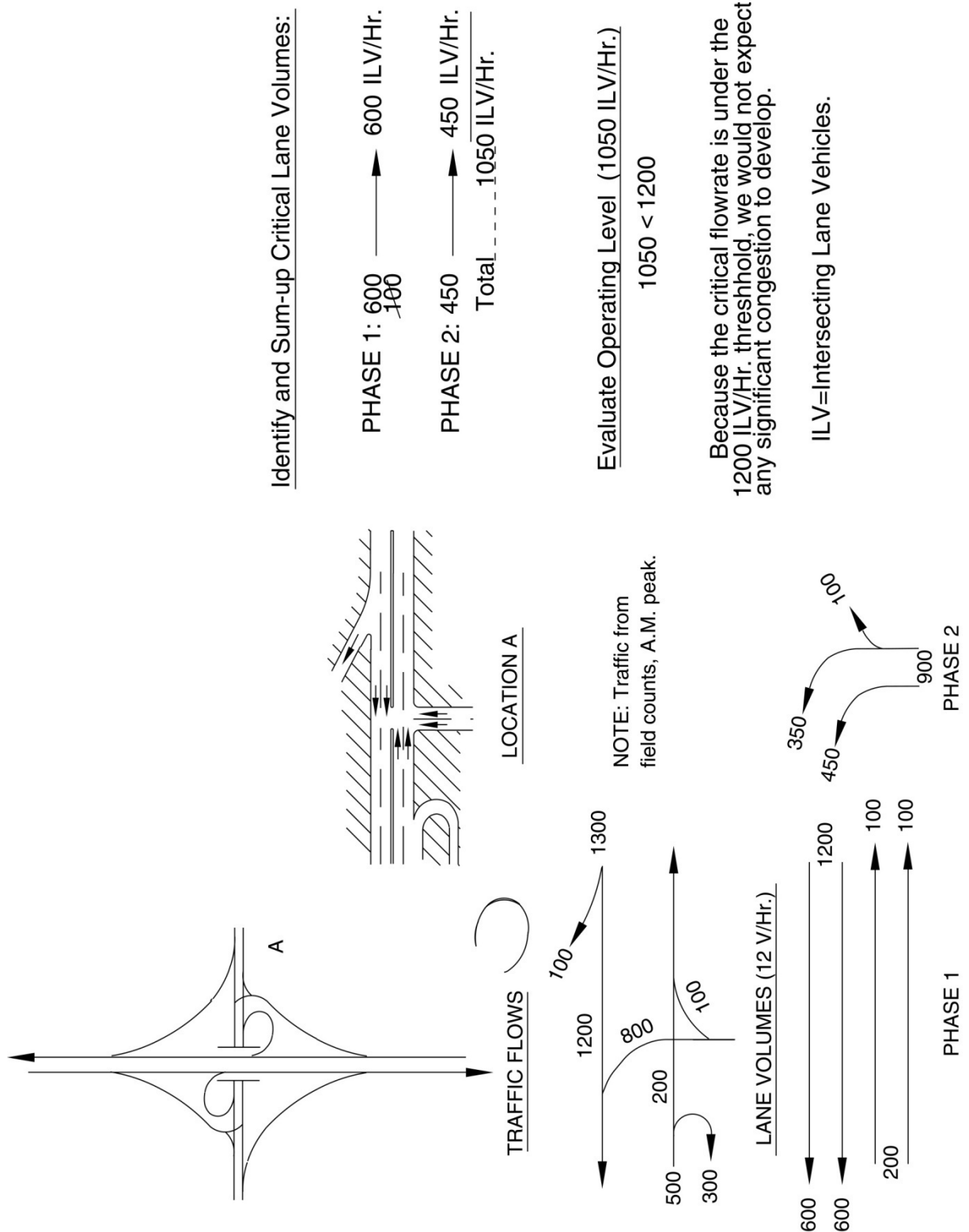
300

100

ILV=Intersecting Lane Vehicles.

1500 ILV/Hr.

**Figure 406C**  
**Two-quadrant Cloverleaf**

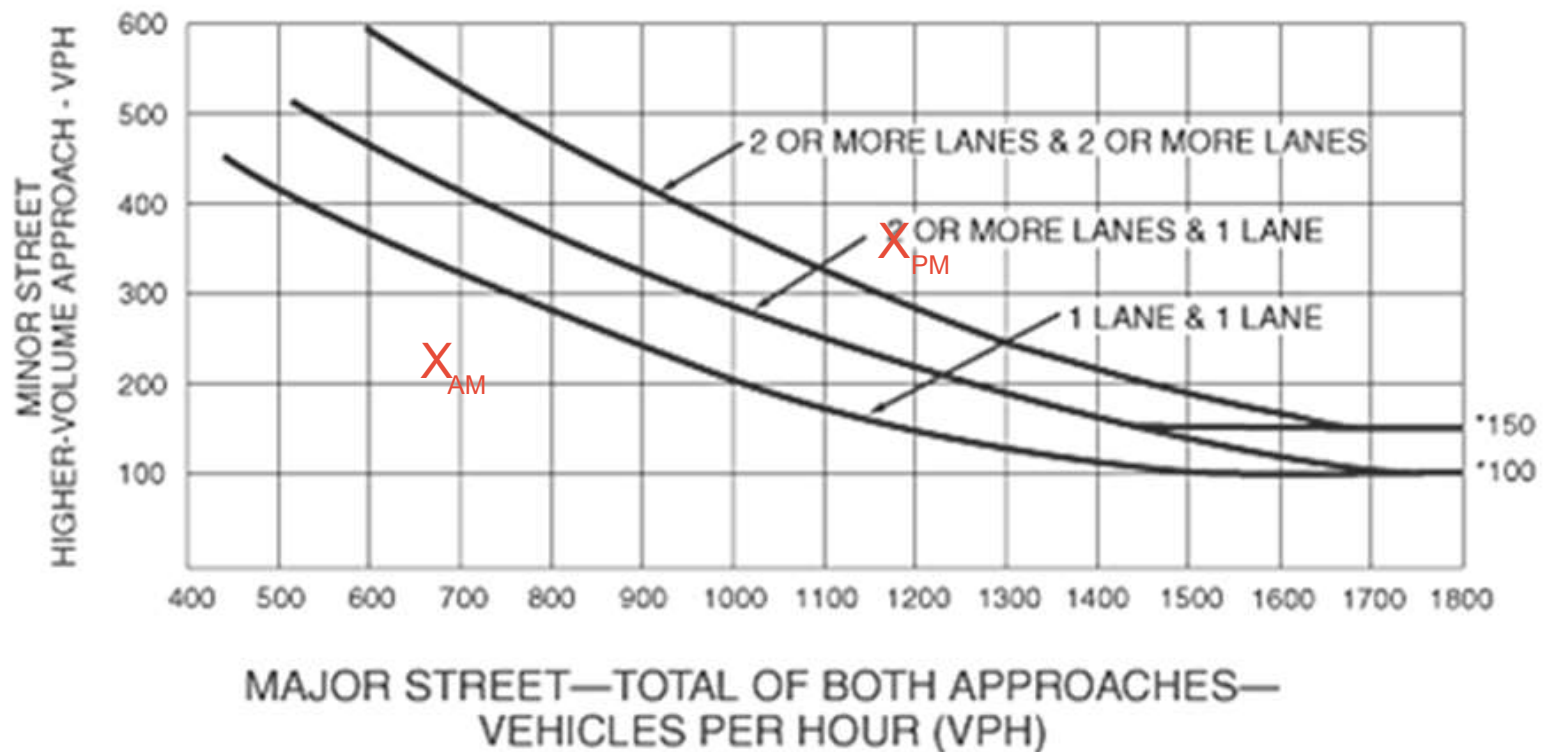


# **APPENDIX E**

## **Peak Hour Traffic Signal Warrant Worksheets**

# Campus Drive / 7th Street

Figure 4C-3. Warrant 3, Peak Hour

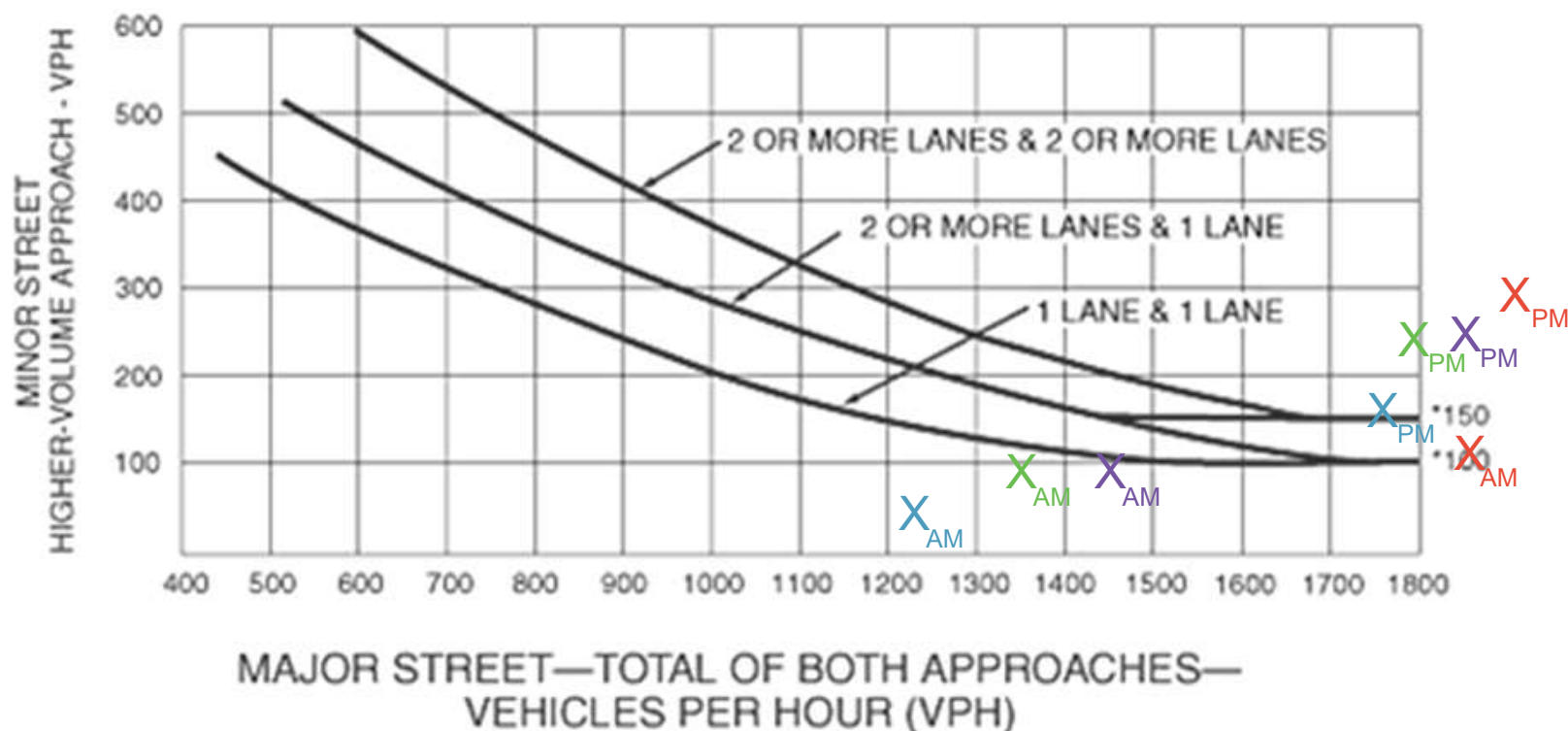


\*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

| LEGEND                          |                                   |
|---------------------------------|-----------------------------------|
| X <sub>AM</sub> X <sub>PM</sub> | Cumulative Year 2042 Plus Project |

# 12th Avenue / Glendale Avenue

Figure 4C-3. Warrant 3, Peak Hour



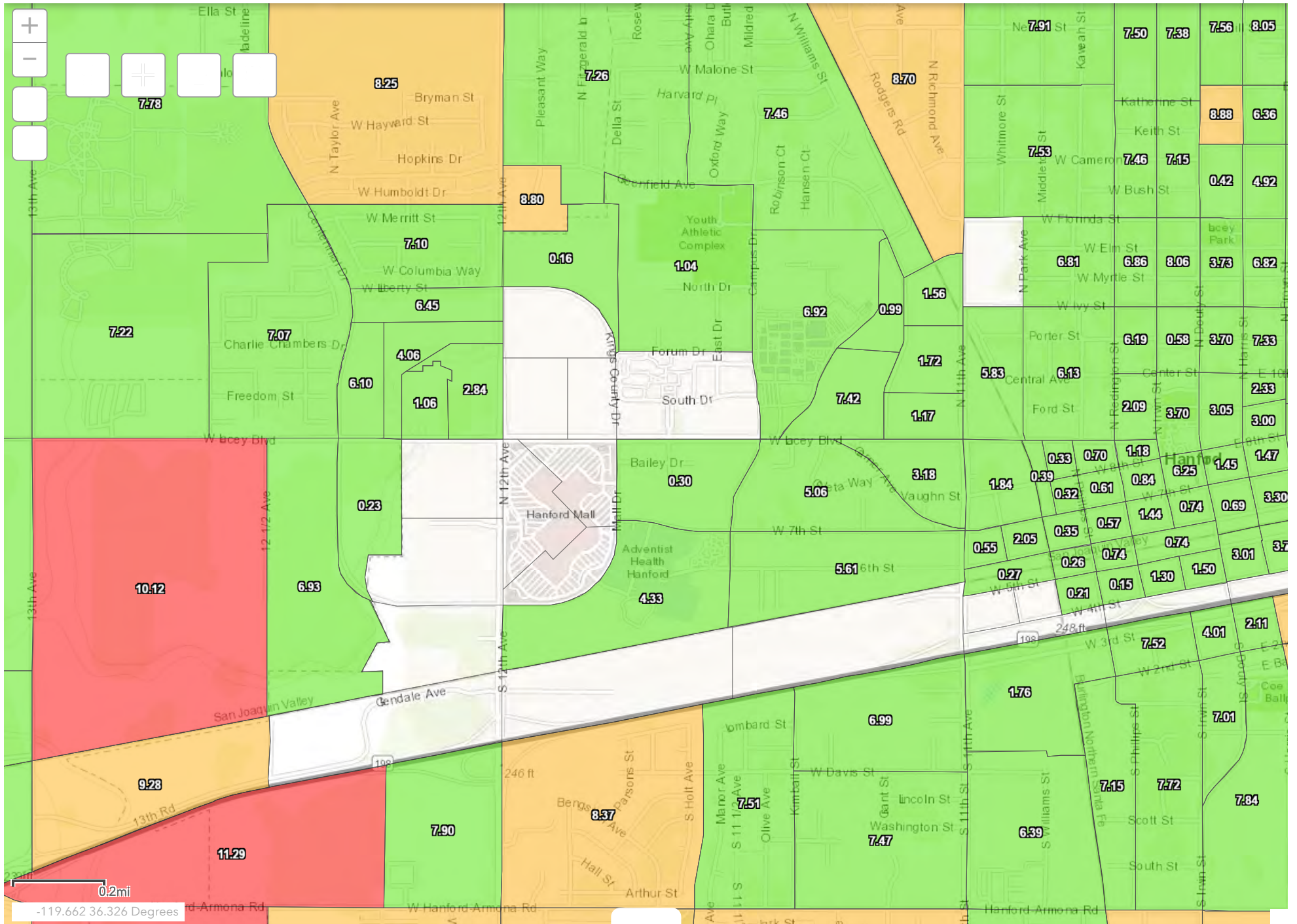
\*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

## LEGEND

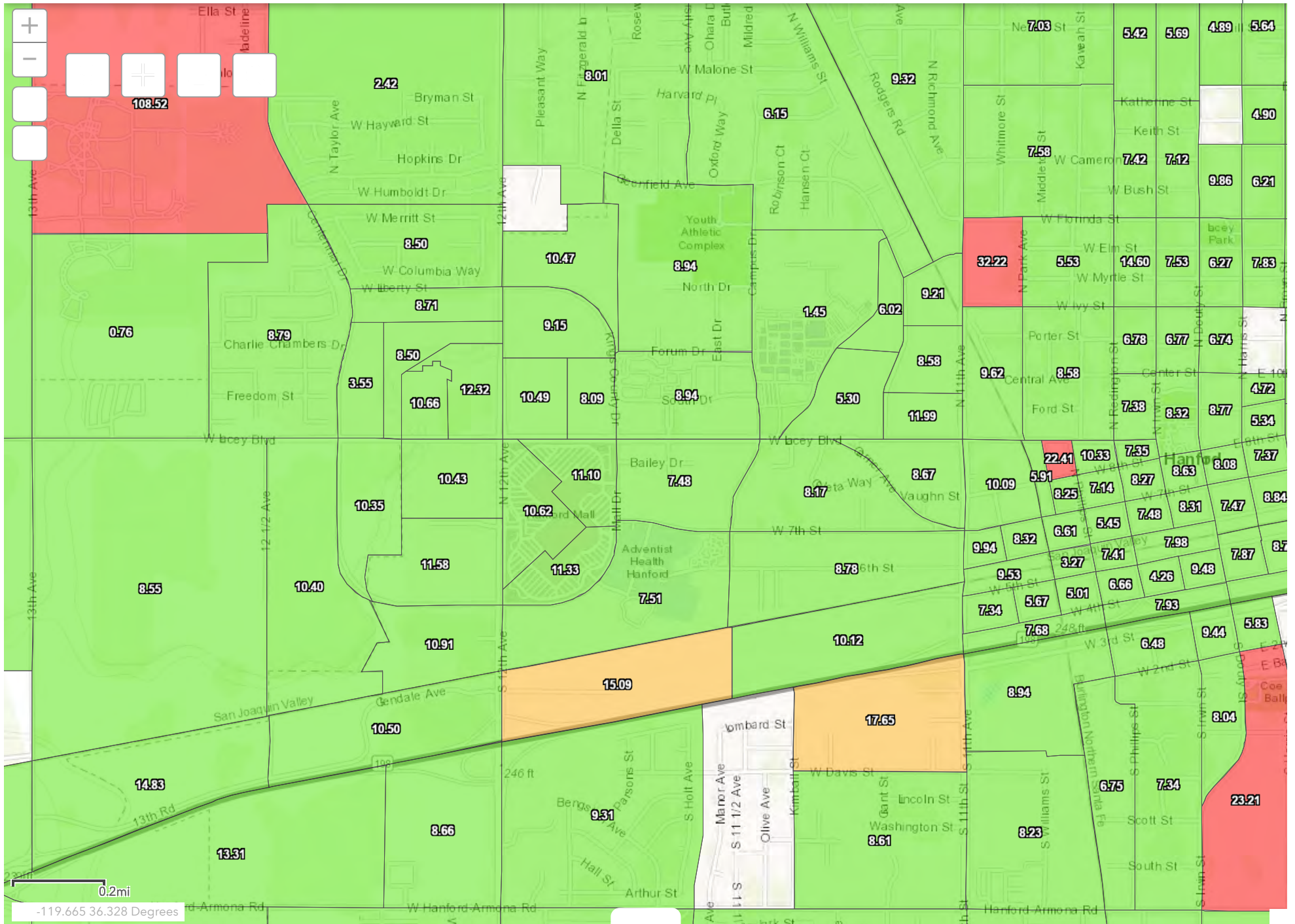
- $X_{AM}$   $X_{PM}$  Existing
- $X_{AM}$   $X_{PM}$  Existing Plus Project
- $X_{AM}$   $X_{PM}$  Near-Term Plus Project
- $X_{AM}$   $X_{PM}$  Cumulative Year 2042 Plus Project

# **APPENDIX F**

## **VMT Analysis Maps**







## APPENDIX G

### HANFORD PLACE MEDICAL MIXED-USE DEVELOPMENT PROJECT VEHICLE MILES TRAVELED (VMT) ANALYSIS MEMORANDUM

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**MEMORANDUM**

**DATE:** March 08, 2023

**To:** Steve Brandt, AICP

**FROM:** Ambarish Mukherjee, P.E., AICP

**SUBJECT:** Hanford Place Medical Mixed-use Development Project Vehicle Miles Traveled (VMT) Analysis Memorandum

LSA has prepared this Vehicle Miles Traveled (VMT) analysis for the Hanford Place medical development project (project) in the City of Hanford (City). The 39.23-acre vacant project site is located between State Route 198 (SR-198) and the San Joaquin Valley Railroad in the City, in Kings County (County). 5th Street passes through the project site in an east/west direction and Campus Drive passes through the project in a north/south direction. In addition, the Peoples Ditch runs through the project site.

The project proposes to develop a medical and mixed-use development and would construct 15 buildings consisting of medical outpatient clinic services, a hotel and conference center, specialized education, retail, medical office, skilled nursing and assisted living, and multi-family residential uses. The project requires a General Plan Amendment (GPA) to convert the project site from Highway Commercial to Service Commercial and High-Density Residential. Detailed proposed project land uses are shown in Table A below.

**Table A: Detailed Project Land uses**

| <b>Building</b>             | <b>Total Square Feet</b> | <b>Number of Units</b> |
|-----------------------------|--------------------------|------------------------|
| Ambulatory Surgery Center   | 22,525                   | -                      |
| Specialty Clinic            | 12,445                   | -                      |
| Medical Office Building     | 24,890                   | 2 buildings            |
| Psychiatric Health Facility | 12,445                   | -                      |
| Hotel and Conference Center | 100,000                  | 105 rooms              |
| Nursing College             | 35,000                   | 8-10 classrooms        |
| Skilled Nursing Facility    | 54,611                   | 59 units               |
| Memory Care                 | 34,480                   | 40 units               |
| Assisted Living Facility    | 34,380                   | -                      |
| Multi-Family Apartment      | 76,500                   | 90 units               |
| Medical/Commercial          | 41,500                   | -                      |

## BACKGROUND AND ANALYSIS METRICS

On December 28, 2018, the California Office of Administrative Law cleared the revised California Environmental Quality Act (CEQA) guidelines for use. Among the changes to the guidelines was removal of vehicle delay and level of service from consideration under CEQA. With the adopted guidelines, transportation impacts are to be evaluated based on a project generated VMT.

The City has recently adopted its Senate Bill 743 (SB 743) guidelines – City of Hanford VMT Thresholds and Implementation Guidelines (guidelines), November 2022. Therefore, the project VMT analysis was conducted using the methodology and significant threshold criteria identified in the guidelines. As previously mentioned, the project includes residential, multiple medical uses, and commercial land uses. As per the guidelines, mixed-use projects should be evaluated separately for each component of the project using the applicable VMT metric.

### VMT Metrics and Thresholds

The guidelines recommend use of VMT per capita metric to evaluate residential land uses, VMT per service population for uses such as medical offices and hospitals and “net change in VMT” to evaluate commercial land uses. The guidelines also indicate that VMT per service population can be used for land uses that include trips and VMT from both visitors and employees. Though most of the project land uses are medical related that include considerable visitor trips, project uses such as Memory Care, Assisted Living, and Skilled Nursing facility only include trips from its employees and the trips/VMT from visitors on a daily basis is nominal. Therefore, to evaluate these project land uses, VMT per employee was considered as the applicable metric. The following table, Table B shows the project land uses and applicable VMT metrics used to evaluate the project land uses.

**Table B: Project land uses and applicable VMT metrics**

| Land use                    | VMT metric                 |
|-----------------------------|----------------------------|
| Ambulatory Surgery Center   | VMT per service population |
| Specialty Clinic            | VMT per service population |
| Medical Office Building     | VMT per service population |
| Psychiatric Health Facility | VMT per service population |
| Hotel and Conference Center | VMT per service population |
| Nursing College             | VMT per service population |
| Skilled Nursing Facility    | VMT per employee           |
| Memory Care                 | VMT per employee           |
| Assisted Living Facility    | VMT per employee           |
| Multi-Family Apartment      | VMT per capita             |
| Medical/Commercial          | Net change in roadway VMT  |

The guidelines also established Kings County as the region and 13% as the threshold for comparison of VMT metrics. Therefore, if the project VMT per capita, VMT per employee, or VMT per service population exceeds 87% of corresponding Kings County baseline average, the project would have a significant VMT impact. Similarly, for the evaluation of retail component, if the regional roadway VMT is greater in the “with project” scenario compared to the “no project” scenario, the project will have a significant VMT impact.

The guidelines also provide multiple screening criteria to screen out land use projects from a detailed VMT analysis. As mentioned above, as per the guidelines, mixed-use projects should be evaluated separately for each component of the project using applicable VMT metrics. Similarly, each component of the project can be evaluated against the screening criteria established in the guidelines. The following table, Table C shows various screening criteria from the guidelines and their applicability to the project land uses. As shown in Table C, only the retail component of the project can be screened out of detailed VMT analysis. However, the retail component was included in the project model run to appropriately account for the internal capture that will occur due to the mixed use nature of the project.

**Table C: Project Land use Screening Evaluation**

| Project Land use            | VMT metric                 | Within Transit Priority Area | Retail less than 55 TSF | Redevelopment | Affordable Housing | Low VMT area (Screening Maps) * | Screened Out |
|-----------------------------|----------------------------|------------------------------|-------------------------|---------------|--------------------|---------------------------------|--------------|
| Ambulatory Surgery Center   | VMT per service population | No                           | N/A                     | N/A           | N/A                | N/A                             | No           |
| Specialty Clinic            | VMT per service population | No                           | N/A                     | N/A           | N/A                | N/A                             | No           |
| Medical Office Building     | VMT per service population | No                           | N/A                     | N/A           | N/A                | N/A                             | No           |
| Psychiatric Health Facility | VMT per service population | No                           | N/A                     | N/A           | N/A                | N/A                             | No           |
| Hotel and Conference Center | VMT per service population | No                           | N/A                     | N/A           | N/A                | N/A                             | No           |
| Nursing College             | VMT per service population | No                           | N/A                     | N/A           | N/A                | N/A                             | No           |
| Skilled Nursing Facility    | VMT per employee           | No                           | N/A                     | N/A           | N/A                | N/A                             | No           |
| Memory Care                 | VMT per employee           | No                           | N/A                     | N/A           | N/A                | N/A                             | No           |
| Assisted Living Facility    | VMT per employee           | No                           | N/A                     | N/A           | N/A                | N/A                             | No           |
| Multi-Family Apartment      | VMT per capita             | No                           | N/A                     | N/A           | N/A                | N/A                             | No           |
| Medical/Commercial          | Net Change in roadway VMT  | No                           | Yes                     | N/A           | N/A                | N/A                             | Yes          |

\*: Use of screening maps is not applicable for projects that require a GPA

The guidelines include an additional screening criterion for total trips generated by the project. While other screening criteria are applicable for individual project components, this criterion should be applied to entire project. The project requires a GPA and therefore if the project generates less

than 500 daily trips, the project can be screened out of a VMT analysis. Based on project daily trip generation, the project generates more than 500 daily trips and therefore, the daily trip criterion is not applicable to the project. Given that the project land uses other than retail cannot be screened out, a detailed VMT analysis was conducted for these land uses. The VMT analysis is described in detail in the following sections.

## METHODOLOGY

For projects that require a detailed VMT analysis, the guidelines recommend use of Kings County Association of Governments (KCAG) travel demand model to conduct the VMT analysis. Therefore, KCAG model was used for the VMT evaluation of the project.

Numerical values for the regional thresholds (VMT per capita, VMT per employee, and VMT per service population) have been obtained from the guidelines document – Table E: Significance Thresholds for VMT Analysis.

### Project Traffic Analysis Zone Update

To calculate the project's VMT metrics, the first step was to update the traffic analysis zones (TAZs) in the model that include the project area. KCAG model includes capability to add new zones or conduct zone splits. Ideally, the project needs to be isolated to isolate the project VMT. Based on the review of project land uses, it was determined that addition of six new TAZs (one for multifamily residential, one for hotel/conference center, one for memory care, assisted living, and skilled nursing facility, one for specialty clinic, medical office, ambulatory surgery center, and psychiatric facility, one for nursing college, and one for commercial/retail land uses) would be adequate to incorporate the project in the model. Similar project land uses were grouped together for modeling purposes. Therefore, six new TAZs were added in the project location within the model, and the proposed project socioeconomic data were added within these TAZs for purposes of this analysis.

The project traffic impact study – Draft Hanford Place Development Traffic Impact Study, December 2020 by VRPA Technologies Inc (TIS), included employee information for some of the project land uses. Number of employees information for available project land uses was obtained from the project TIS. For remaining project land uses, number of employees information was estimated using Institute of Transportation Engineers (ITE) Trip Generation Manual, 11<sup>th</sup> Edition. ITE trip generation manual includes trip rates for land uses by different units (thousand square feet- TSF, employees) which can be used to estimate number of employees per TSF for land uses. LSA converted the project land uses into model socioeconomic categories using the process described above. The KCAG model socioeconomic database for the baseline (2015) scenario was updated with the project socioeconomic data within the six project TAZs.

Based on project description, vehicular access to the site would be provided by Glendale Avenue, 5th Street, and Campus Drive. The extension of these roadways would be constructed to City standards and would be dedicated as public right of way. Therefore, model roadway network was updated to include these extensions (Glendale Ave, 5<sup>th</sup> Street, and Campus Drive).

Model run was conducted for this updated model and the outputs from this model run were used to estimate project VMT metrics for each of the project land uses.



### Project Service Population

Also as indicated in the guidelines, for land uses that include substantial user base like hotels, hospitals, medical offices, and other similar uses, a significant amount of trips and VMT is generated by visitors, or patients. As such, as stated in the City's VMT guidelines, customers/consumers must be included as part of the service population calculations to calculate project VMT per service population.

For the project land uses such as medical office building, ambulatory surgery center, and hotel, majority of trips and VMT would be generated by patients and visitors. Therefore, LSA used information from the KCAG TDM run to estimate the number of patients/visitors for the project for each of the applicable uses. Trip purpose information from the travel model was used to differentiate between employee trips and patient/visitor trips. Trips for all project TAZs were extracted by trip purpose in order to identify trips made by patients/visitors. Estimation of visitors using trip purpose information from the model is shown in detail in Table 2 of Appendix A.

### VMT ANALYSIS

Table D shows the result of the VMT analysis. As shown in Table D, the project VMT per capita for residential component of the project is 39.9 percent lower than the regional threshold. Similarly, the project VMT per employee for the memory care, assisted living, and skilled nursing facility uses is 62.7 percent lower than the corresponding regional threshold. Also, the VMT per service population for rest of non-residential uses (except retail/commercial) is 43.6 percent lower than the regional threshold. As such, based on the project's VMT analysis, the project will not have a significant VMT impact.

**Table D: Project VMT metrics and Regional Threshold Comparison**

| 2015                              | Project | City of Hanford Threshold * | Difference | % Difference |
|-----------------------------------|---------|-----------------------------|------------|--------------|
| <b>VMT Per Capita</b>             | 5.40    | 8.99                        | -3.59      | -39.9%       |
| <b>VMT per Employee</b>           | 6.32    | 16.95                       | -10.63     | -62.7%       |
| <b>VMT per service population</b> | 12.32   | 21.84                       | -9.52      | -43.6%       |

\* Obtained from City of Hanford VMT Thresholds and Implementation Guidelines, November 2022. (Table E: Significance Thresholds for VMT Analysis)

Detailed VMT calculation worksheet is included in Appendix A.

### ATTACHMENTS

Appendix A: VMT Calculation Worksheet

## Appendix A

Table 1 - VMT Calculations

| Multi Family                | Project | City of Hanford Threshold * |
|-----------------------------|---------|-----------------------------|
| Total Households (a)        | 90      |                             |
| Total Population (b)        | 211     |                             |
| Homebased (HB) VMT (c')     | 1,138   |                             |
| HB VMT per capita (d = c/b) | 5.40    | 8.99                        |

| Memory care, Assisted Living, and Skilled Nursing Facility | Project | City of Hanford Threshold * |
|------------------------------------------------------------|---------|-----------------------------|
| Total Employment (a)                                       | 24      |                             |
| Homebased Work (HBW) VMT (b)                               | 152     |                             |
| HBW VMT per employee (c = b/a)                             | 6.32    | 16.95                       |

| Ambulatory Surgery Center, Specialty Clinic, Medical Office Building, Psychiatric Health Facility | Project | City of Hanford Threshold * |
|---------------------------------------------------------------------------------------------------|---------|-----------------------------|
| Total Employment (a)                                                                              | 159     |                             |
| Total consumers/patients (b)                                                                      | 85      |                             |
| Total service population (c = b+a)                                                                | 244     |                             |
| Origin-Destination (OD) VMT (d)                                                                   | 3,165   |                             |
| VMT per service population (e=d/c)                                                                | 12.99   | 21.84                       |

| Hotel/Conference Center            | Project | City of Hanford Threshold * |
|------------------------------------|---------|-----------------------------|
| Total Employment (a)               | 59      |                             |
| Total visitors (b)                 | 90      |                             |
| Total service population (c = b+a) | 148     |                             |
| Origin-Destination (OD) VMT (d)    | 1,808   |                             |
| VMT per service population (e=d/c) | 12.19   | 21.84                       |

| Nursing College                    | Project | City of Hanford Threshold * |
|------------------------------------|---------|-----------------------------|
| Total Employment (a)               | 10      |                             |
| Total Students (b)                 | 96      |                             |
| Total service population (c = b+a) | 106     |                             |
| Origin-Destination (OD) VMT (d)    | 1,162   |                             |
| VMT per service population (e=d/c) | 10.96   | 21.84                       |

| Combined - Ambulatory Surgery Center<br>Specialty Clinic, Medical Office Building,<br>Psychiatric Health Facility, Hotel, and Nursing<br>College | Project | City of Hanford<br>Threshold * |
|--------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------------------------------|
| Total Employment (a)                                                                                                                             | 227     |                                |
| Total consumers/patients (b)                                                                                                                     | 271     |                                |
| Total service population (c = b+a)                                                                                                               | 498     |                                |
| Origin-Destination (OD) VMT (d)                                                                                                                  | 6,136   |                                |
| VMT per service population (e=d/c)                                                                                                               | 12.32   | 21.84                          |

*\* Tripends for appropriate trip purposes are identified as customer tripends*

*As a conservative estimate, vehicle trips are used as number of customers*

**Table 2 - Estimation of Customer Population**

**Vehicle Trips by Trip purpose - Ambulatory Surgery Center, Specialty Clinic,  
Medical Office Building, Psychiatric Health Facility**

| Trip Purpose                  | Productions | Attractions |
|-------------------------------|-------------|-------------|
| Homebased Work (HW)           | -           | 142         |
| Homebased Shop (HS)           | -           | 39          |
| Homebased School (HK)         | -           | -           |
| Homebased College (HC)        | -           | -           |
| Homebased Other (HO)          | -           | 48          |
| Workbased Other (WO)          | 13          | 13          |
| Otherbased Other (OO)         | 110         | 109         |
| Highway Commercial (HY)       | -           | -           |
| <b>Total</b>                  | <b>123</b>  | <b>350</b>  |
| <b>Total Customer trips *</b> |             | <b>85</b>   |

\* Attractions for HO, WO, OO trip purposes are considered for trips by customers (48+13+ 109 =170)

Trip ends are divided by 2 to account for trips (from/to) (170/2 = 85)

Also as a conservative estimate vehicle trips are considered as person trips/total customers

**Vehicle Trips by Trip purpose - Hotel/Conference Center**

| Trip Purpose                  | Productions | Attractions |
|-------------------------------|-------------|-------------|
| Homebased Work (HW)           | -           | 56          |
| Homebased Shop (HS)           | -           | 52          |
| Homebased School (HK)         | -           | -           |
| Homebased College (HC)        | -           | -           |
| Homebased Other (HO)          | -           | 41          |
| Workbased Other (WO)          | 11          | 11          |
| Otherbased Other (OO)         | 129         | 128         |
| Highway Commercial (HY)       | -           | -           |
| <b>Total</b>                  | <b>140</b>  | <b>288</b>  |
| <b>Total Customer trips *</b> |             | <b>90</b>   |

\* Attractions for HO, WO, OO trip purposes are considered for trips by customers (41 + 11 + 128 = 180)

Trip ends are divided by 2 to account for trips (from/to) (180/2 = 90)

Also as a conservative estimate vehicle trips are considered as person trips/total customers



November 3, 2022

Diana Black  
City of Hanford  
317 N Douty St  
Hanford, CA 93230

Re: Hanford Place  
GPA 2022-01, RZ 2022-01, PUD 2022-01

Dear Diana Black,

Thank you for providing PG&E the opportunity to review the proposed plans for Hanford Place dated 10/18/2022. Our review indicates the proposed improvements do not appear to directly interfere with existing PG&E facilities or impact our easement rights.

Please note this is our preliminary review and PG&E reserves the right for additional future review as needed. This letter shall not in any way alter, modify, or terminate any provision of any existing easement rights. If there are subsequent modifications made to the design, we ask that you resubmit the plans to the email address listed below.

If the project requires PG&E gas or electrical service in the future, please continue to work with PG&E's Service Planning department: <https://www.pge.com/cco/>.

As a reminder, before any digging or excavation occurs, please contact Underground Service Alert (USA) by dialing 811 a minimum of 2 working days prior to commencing any work. This free and independent service will ensure that all existing underground utilities are identified and marked on-site.

If you have any questions regarding our response, please contact the PG&E Plan Review Team at [pgeplanreview@pge.com](mailto:pgeplanreview@pge.com).

Sincerely,

PG&E Plan Review Team  
Land Management

November 8, 2022

Gabrielle Myers  
City of Hanford  
Department of Community Development  
319 North Douty Street  
Hanford CA, 93230

**Project: Planned Unit Development No. 2022-01**

**District CEQA Reference No: 20221396**

Dear Mr. Myers:

The San Joaquin Valley Air Pollution Control District (District) has reviewed the Planned Unit Development (PUD) referenced above from the City of Hanford (City). Per the PUD, the project consists of constructing a master planned medical and mixed-use development, including the construction of 15 buildings consisting of medical outpatient clinic services, a hotel and conference center, specialized education, retail, medical office, skilled nursing and assisted living, and multi-family residential uses, as well as a bio infiltration basin, associated open space, circulation and parking, and infrastructure improvements (Project). The Project is located between 11th and 12th Avenue along Glendale Drive, north of Highway 198 in Hanford, CA.

The District offers the following comments regarding the Project:

### **1) Project Related Emissions**

At the federal level under the National Ambient Air Quality Standards (NAAQS), the District is designated as extreme nonattainment for the 8-hour ozone standards and serious nonattainment for the particulate matter less than 2.5 microns in size (PM<sub>2.5</sub>) standards. At the state level under California Ambient Air Quality Standards (CAAQS), the District is designated as nonattainment for the 8-hour ozone, PM<sub>10</sub>, PM<sub>2.5</sub> standards.

The District's initial review of the Project concludes that emissions resulting from construction and/or operation of the Project may exceed any of the following significance thresholds as identified in the District's Guidance for Assessing and Mitigating Air Quality Impacts: <https://www.valleyair.org/transportation/GAMAQI.pdf>.

**Samir Sheikh**  
Executive Director/Air Pollution Control Officer

**Northern Region**  
4800 Enterprise Way  
Modesto, CA 95356-8718  
Tel: (209) 557-6400 FAX: (209) 557-6475

**Central Region (Main Office)**  
1990 E. Gettysburg Avenue  
Fresno, CA 93726-0244  
Tel: (559) 230-6000 FAX: (559) 230-6061

**Southern Region**  
34946 Flyover Court  
Bakersfield, CA 93308-9725  
Tel: (661) 392-5500 FAX: (661) 392-5585

The District recommends that a more detailed preliminary review of the Project be conducted for the Project's construction and operational emissions.

### **1a) Construction Emissions**

The District recommends, to reduce impacts from construction-related diesel exhaust emissions, the Project should utilize the cleanest available off-road construction equipment, including the latest tier equipment.

### **1b) Operational Emissions**

Operational (ongoing) air emissions from mobile sources and stationary sources should be analyzed separately. For reference, the District's significance thresholds are identified in the District's Guidance for Assessing and Mitigating Air Quality Impacts:

<https://www.valleyair.org/transportation/GAMAQI.pdf>.

*Recommended Mitigation Measure:* At a minimum, project related impacts on air quality should be reduced to levels of significance through incorporation of design elements such as measures that reduce Vehicle Miles Traveled (VMTs), and measures that increase energy efficiency. More information on transportation mitigation measures can be found at:

<http://www.valleyair.org/transportation/Mitigation-Measures.pdf>.

### **1c) Recommended Model for Quantifying Air Emissions**

Project-related criteria pollutant emissions from construction and operational sources should be identified and quantified. Emissions analysis should be performed using the California Emission Estimator Model (CalEEMod), which uses the most recent CARB-approved version of relevant emissions models and emission factors. CalEEMod is available to the public and can be downloaded from the CalEEMod website at: [www.caleemod.com](http://www.caleemod.com).

## **2) Project Siting**

Based on the PUD, the Project consists of a master planned medical and mixed-use development that includes sensitive and residential uses adjacent to an existing freeway (SR 198). The California Air Resources Board (CARB) recommends that residences and other sensitive receptors not be located within 500 feet of freeways or high traffic roadways. Please refer to CARB's Air Quality and Land Use Handbook: A Community Health Perspective located at: <https://ww3.arb.ca.gov/ch/handbook.pdf>.



### **3) Health Risk Screening/Assessment**

The City should evaluate the risk associated with the Project for sensitive receptors (residences, businesses, hospitals, day-care facilities, health care facilities, etc.) in the area and mitigate any potentially significant risk to help limit exposure of sensitive receptors to emissions.

To determine potential health impacts on surrounding receptors (residences, businesses, hospitals, day-care facilities, health care facilities, etc.) a Prioritization and/or a Health Risk Assessment (HRA) should be performed for the Project. These health risk determinations should quantify and characterize potential Toxic Air Contaminants (TACs) identified by the Office of Environmental Health Hazard Assessment/California Air Resources Board (OEHHA/CARB) that pose a present or potential hazard to human health.

Health risk analyses should include all potential air emissions from the project, which include emissions from construction of the project, including multi-year construction, as well as ongoing operational activities of the project. Note, two common sources of TACs can be attributed to diesel exhaust emitted from heavy-duty off-road earth moving equipment during construction, and from ongoing operation of heavy-duty on-road trucks.

#### Prioritization (Screening Health Risk Assessment):

A "Prioritization" is the recommended method for a conservative screening-level health risk assessment. The Prioritization should be performed using the California Air Pollution Control Officers Association's (CAPCOA) methodology.

The District recommends that a more refined analysis, in the form of an HRA, be performed for any project resulting in a Prioritization score of 10 or greater. This is because the prioritization results are a conservative health risk representation, while the detailed HRA provides a more accurate health risk evaluation.

To assist land use agencies and project proponents with Prioritization analyses, the District has created a prioritization calculator based on the aforementioned CAPCOA guidelines, which can be found here:

[http://www.valleyair.org/busind/pto/emission\\_factors/Criteria/Toxics/Utilities/PRIORITIZATION-CALCULATOR.xls](http://www.valleyair.org/busind/pto/emission_factors/Criteria/Toxics/Utilities/PRIORITIZATION-CALCULATOR.xls)

#### Health Risk Assessment:

Prior to performing an HRA, it is strongly recommended that land use agencies/project proponents develop and submit for District review a health risk modeling protocol that outlines the sources and methodologies that will be used to perform the HRA. This step will ensure all components are addressed when performing the HRA.

A development project would be considered to have a potentially significant health risk if the HRA demonstrates that the project-related health impacts would exceed the District's significance threshold of 20 in a million for carcinogenic risk, or 1.0 for either the Acute or Chronic Hazard Indices.

A project with a significant health risk would trigger all feasible mitigation measures. The District strongly recommends that development projects that result in a significant health risk not be approved by the land use agency.

The District is available to review HRA protocols and analyses. For HRA submittals please provide the following information electronically to the District for review:

- HRA (AERMOD) modeling files
- HARP2 files
- Summary of emissions source locations, emissions rates, and emission factor calculations and methodologies.

For assistance, please contact the District's Technical Services Department by:

- E-Mailing inquiries to: [hramodeler@valleyair.org](mailto:hramodeler@valleyair.org)
- Calling (559) 230-5900

*Recommended Measure:* Development projects resulting in TAC emissions should be located an adequate distance from residential areas and other sensitive receptors in accordance to CARB's Air Quality and Land Use Handbook: A Community Health Perspective located at <https://www3.arb.ca.gov/ch/handbook.pdf>.

#### **4) Ambient Air Quality Analysis**

An Ambient Air Quality Analysis (AAQA) uses air dispersion modeling to determine if emissions increases from a project will cause or contribute to a violation of State or National Ambient Air Quality Standards. The District recommends an AAQA be performed for the Project if emissions exceed 100 pounds per day of any pollutant.

An acceptable analysis would include emissions from both project-specific permitted and non-permitted equipment and activities. The District recommends consultation with District staff to determine the appropriate model and input data to use in the analysis.

Specific information for assessing significance, including screening tools and modeling guidance, is available online at the District's website: [www.valleyair.org/ceqa](http://www.valleyair.org/ceqa).

## **5) Voluntary Emission Reduction Agreement**

Criteria pollutant emissions may result in emissions exceeding the District's significance thresholds, potentially resulting in a significant impact on air quality. When a project is expected to have a significant impact, the District recommends the environmental review also include a discussion on the feasibility of implementing a Voluntary Emission Reduction Agreement (VERA) for this Project.

A VERA is a mitigation measure by which the project proponent provides pound-for-pound mitigation of emissions increases through a process that develops, funds, and implements emission reduction projects, with the District serving a role of administrator of the emissions reduction projects and verifier of the successful mitigation effort. To implement a VERA, the project proponent and the District enter into a contractual agreement in which the project proponent agrees to mitigate project specific emissions by providing funds for the District's incentives programs. The funds are disbursed by the District in the form of grants for projects that achieve emission reductions. Thus, project-related impacts on air quality can be mitigated. Types of emission reduction projects that have been funded in the past include electrification of stationary internal combustion engines (such as agricultural irrigation pumps), replacing old heavy-duty trucks with new, cleaner, more efficient heavy-duty trucks, and replacement of old farm tractors.

In implementing a VERA, the District verifies the actual emission reductions that have been achieved as a result of completed grant contracts, monitors the emission reduction projects, and ensures the enforceability of achieved reductions. After the project is mitigated, the District certifies to the Lead Agency that the mitigation is completed, providing the Lead Agency with an enforceable mitigation measure demonstrating that project-related emissions have been mitigated. To assist the Lead Agency and project proponent in ensuring that the environmental document is compliant with CEQA, the District recommends the environmental document includes an assessment of the feasibility of implementing a VERA.

## **6) Vegetative Barriers and Urban Greening**

There are residential units located north of the Project. The District suggests the City consider the feasibility of incorporating vegetative barriers and urban greening as a measure to further reduce air pollution exposure on sensitive receptors (e.g., residential units).

While various emission control techniques and programs exist to reduce air quality emissions from mobile and stationary sources, vegetative barriers have been shown to be an additional measure to potentially reduce a population's exposure to air pollution through the interception of airborne particles and the uptake of gaseous pollutants. Examples of vegetative barriers include, but are not limited to the following: trees, bushes, shrubs, or a mix of these. Generally, a higher and thicker

vegetative barrier with full coverage will result in greater reductions in downwind pollutant concentrations. In the same manner, urban greening is also a way to help improve air quality and public health in addition to enhancing the overall beautification of a community with drought tolerant, low-maintenance greenery.

## **7) Clean Lawn and Garden Equipment in the Community**

Since the Project consists of commercial and residential development, gas-powered commercial and residential lawn and garden equipment have the potential to result in an increase of NO<sub>x</sub> and PM<sub>2.5</sub> emissions. Utilizing electric lawn care equipment can provide residents with immediate economic, environmental, and health benefits. The District recommends the Project proponent consider the District's Clean Green Yard Machines (CGYM) program which provides incentive funding for replacement of existing gas powered lawn and garden equipment. More information on the District CGYM program and funding can be found at:

<http://www.valleyair.org/grants/cgym.htm>  
and <http://valleyair.org/grants/cgym-commercial.htm>.

## **8) On-Site Solar Deployment**

It is the policy of the State of California that renewable energy resources and zero-carbon resources supply 100% of retail sales of electricity to California end-use customers by December 31, 2045. While various emission control techniques and programs exist to reduce air quality emissions from mobile and stationary sources, the production of solar energy is contributing to improving air quality and public health. The District suggests that the City consider incorporating solar power systems as an emission reduction strategy for the Project.

## **9) Electric Vehicle Chargers**

To support and accelerate the installation of electric vehicle charging equipment and development of required infrastructure, the District offers incentives to public agencies, businesses, and property owners of multi-unit dwellings to install electric charging infrastructure (Level 2 and 3 chargers). The purpose of the District's Charge Up! Incentive program is to promote clean air alternative-fuel technologies and the use of low or zero-emission vehicles. The District recommends that the City and project proponents install electric vehicle chargers at project sites, and at strategic locations.

Please visit [www.valleyair.org/grants/chargeup.htm](http://www.valleyair.org/grants/chargeup.htm) for more information.

## **10) District Rules and Regulations**

The District issues permits for many types of air pollution sources, and regulates some activities that do not require permits. A project subject to District rules and

regulations would reduce its impacts on air quality through compliance with the District's regulatory framework. In general, a regulation is a collection of individual rules, each of which deals with a specific topic. As an example, Regulation II (Permits) includes District Rule 2010 (Permits Required), Rule 2201 (New and Modified Stationary Source Review), Rule 2520 (Federally Mandated Operating Permits), and several other rules pertaining to District permitting requirements and processes.

The list of rules below is neither exhaustive nor exclusive. Current District rules can be found online at: [www.valleyair.org/rules/1ruleslist.htm](http://www.valleyair.org/rules/1ruleslist.htm). To identify other District rules or regulations that apply to future projects, or to obtain information about District permit requirements, the project proponents are strongly encouraged to contact the District's Small Business Assistance (SBA) Office at (559) 230-5888.

#### **10a) District Rules 2010 and 2201 - Air Quality Permitting for Stationary Sources**

Stationary Source emissions include any building, structure, facility, or installation which emits or may emit any affected pollutant directly or as a fugitive emission. District Rule 2010 (Permits Required) requires operators of emission sources to obtain an Authority to Construct (ATC) and Permit to Operate (PTO) from the District. District Rule 2201 (New and Modified Stationary Source Review) requires that new and modified stationary sources of emissions mitigate their emissions using Best Available Control Technology (BACT).

This Project may be subject to District Rule 2010 (Permits Required) and Rule 2201 (New and Modified Stationary Source Review) and may require District permits. Prior to construction, the Project proponent should submit to the District an application for an ATC. For further information or assistance, the project proponent may contact the District's SBA Office at (559) 230-5888.

#### **District Rule 9510 - Indirect Source Review (ISR)**

The Project is subject to District Rule 9510 because it will receive a project-level discretionary approval from a public agency and will equal or exceed 20,000 square feet of medical office space.

The purpose of District Rule 9510 is to reduce the growth in both NO<sub>x</sub> and PM emissions associated with development and transportation projects from mobile and area sources; specifically, the emissions associated with the construction and subsequent operation of development projects. The ISR Rule requires developers to mitigate their NO<sub>x</sub> and PM emissions by incorporating clean air design elements into their projects. Should the proposed development project clean air design elements be insufficient to meet the required emission

reductions, developers must pay a fee that ultimately funds incentive projects to achieve off-site emissions reductions.

Per Section 5.0 of the ISR Rule, an Air Impact Assessment (AIA) application is required to be submitted no later than applying for project-level approval from a public agency. As of the date of this letter, the District has not received an AIA application for this Project. Please inform the project proponent to immediately submit an AIA application to the District to comply with District Rule 9510. One AIA application should be submitted for the entire Project. It is preferable for the applicant to submit an AIA application as early as possible in the City's approval process so that proper mitigation and clean air design under ISR can be incorporated into the City's analysis.

Information about how to comply with District Rule 9510 can be found online at: <http://www.valleyair.org/ISR/ISRHome.htm>.

The AIA application form can be found online at: <http://www.valleyair.org/ISR/ISRFormsAndApplications.htm>.

District staff is available to provide assistance and can be reached by phone at (559) 230-5900 or by email at [ISR@valleyair.org](mailto:ISR@valleyair.org).

#### **10b) District Rule 9410 (Employer Based Trip Reduction)**

The Project may be subject to District Rule 9410 (Employer Based Trip Reduction) if the project would result in employment of 100 or more "eligible" employees. District Rule 9410 requires employers with 100 or more "eligible" employees at a worksite to establish an Employer Trip Reduction Implementation Plan (eTRIP) that encourages employees to reduce single-occupancy vehicle trips, thus reducing pollutant emissions associated with work commutes. Under an eTRIP plan, employers have the flexibility to select the options that work best for their worksites and their employees.

Information about District Rule 9410 can be found online at: [www.valleyair.org/tripreduction.htm](http://www.valleyair.org/tripreduction.htm).

For additional information, you can contact the District by phone at 559-230-6000 or by e-mail at [etrip@valleyair.org](mailto:etrip@valleyair.org)

#### **10c) District Rule 4002 (National Emissions Standards for Hazardous Air Pollutants)**

In the event an existing building will be renovated, partially demolished or removed, the Project may be subject to District Rule 4002. This rule requires a

thorough inspection for asbestos to be conducted before any regulated facility is demolished or renovated. Information on how to comply with District Rule 4002 can be found online at:

<http://www.valleyair.org/busind/comply/asbestosbultn.htm>.

#### **10d) District Rule 4601 (Architectural Coatings)**

The Project may be subject to District Rule 4601 since it may utilize architectural coatings. Architectural coatings are paints, varnishes, sealers, or stains that are applied to structures, portable buildings, pavements or curbs. The purpose of this rule is to limit VOC emissions from architectural coatings. In addition, this rule specifies architectural coatings storage, cleanup and labeling requirements. Additional information on how to comply with District Rule 4601 requirements can be found online at:

<http://www.valleyair.org/rules/currntrules/r4601.pdf>

#### **10e) District Regulation VIII (Fugitive PM10 Prohibitions)**

The project proponent may be required to submit a Construction Notification Form or submit and receive approval of a Dust Control Plan prior to commencing any earthmoving activities as described in Regulation VIII, specifically Rule 8021 – *Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities*.

Should the project result in at least 1-acre in size, the project proponent shall provide written notification to the District at least 48 hours prior to the project proponents intent to commence any earthmoving activities pursuant to District Rule 8021 (Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities). Also, should the project result in the disturbance of 5-acres or more, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials, the project proponent shall submit to the District a Dust Control Plan pursuant to District Rule 8021 (Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities). For additional information regarding the written notification or Dust Control Plan requirements, please contact District Compliance staff at (559) 230-5950.

The application for both the Construction Notification and Dust Control Plan can be found online at:

<https://www.valleyair.org/busind/comply/PM10/forms/DCP-Form.docx>

Information about District Regulation VIII can be found online at:

[http://www.valleyair.org/busind/comply/pm10/compliance\\_pm10.htm](http://www.valleyair.org/busind/comply/pm10/compliance_pm10.htm)



#### **10f) Other District Rules and Regulations**

The Project may also be subject to the following District rules: Rule 4102 (Nuisance) and Rule 4641 (Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations).

#### **11) District Comment Letter**

The District recommends that a copy of the District's comments be provided to the Project proponent.

If you have any questions or require further information, please contact Patrick Chimienti by e-mail at [patrick.chimienti@valleyair.org](mailto:patrick.chimienti@valleyair.org) or by phone at (559) 230-6139.

Sincerely,

Brian Clements  
Director of Permit Services



For: Seth Lane  
Program Manager

**From:** [Samantha McCarty](#)  
**To:** [Gabrielle Myers](#)  
**Cc:** [Shana Powers](#)  
**Subject:** RE: General Plan Amendment No. 2022-01, Rezone No. 2022-01, and Planned Unit Development No. 2022-01  
**Date:** Wednesday, November 9, 2022 4:08:09 PM

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CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Dear Gabrielle,

Thank you for contacting the Santa Rosa Rancheria Tachi-Yokut Tribe regarding: General Plan Amendment No. 2022-01, Rezone No. 2022-01, and Planned Unit Development No. 2022-01. Due to tribal history and knowledge of the area, the Tribe is requesting to have a burial treatment plan and curation agreement put in place, as well as be retained for a cultural presentation for all construction staff and to have a Native American Monitor on site during all ground disturbance. If you have any questions, comments, and or concerns please contact myself or the SRR Cultural Department. We look forward to working with you on this project. Thank you.

Sincerely,

*Samantha McCarty*

Santa Rosa Rancheria Tachi-Yokut Tribe

Cultural Specialist II

[SMcCarty@tachi-yokut-nsn.gov](mailto:SMcCarty@tachi-yokut-nsn.gov)

Office: (559) 924-1278 x 4091

Cell: (559) 633-6640

**\*PLEASE KEEP ALL CULTURAL STAFF IN EMAILS UNLESS STATED OTHERWISE**

August 8, 2023

**Via E-mail: [gmyers@cityofhanfordca.com](mailto:gmyers@cityofhanfordca.com)**

Gabrielle Myers  
Senior Planner  
City of Hanford  
Community Development, Planning Division  
317 N. Douty Street  
Hanford, California 93230

**Re: Comments on Hanford Place Initial Study/Mitigated Negative Declaration  
No 2023-93 Supporting General Plan Amendment No. 2022-01, Rezone No.  
2022-01, and Planned Unit Development No. 2022-01**

Dear Ms. Myers:

This purpose of this letter is to provide initial comments on the City's draft Initial Study/Mitigated Negative Declaration ("**IS/MND**") for the above-referenced Hanford Place project ("**Project**") on behalf of our client, Adventist Health System/West (dba Adventist Health) and Hanford Community Hospital (dba Adventist Health Hanford) (collectively, "**Adventist**"). The Project proposes an intense and lengthy three-year construction project, ultimately resulting in a new, large mixed-use development adjacent to Adventist's existing hospital and medical offices. Adventist is a neighboring property owner and is concerned about potential impacts of construction and eventual operation of the Project on its current facilities and operations. The IS/MND does not provide the requisite scope of analysis we would expect to see for a project of this size and scale. There are fair arguments of potential Project impacts to several resource areas requiring further analysis, which trigger the need for the preparation and circulation of an Environmental Impact Report, as described below. We are continuing to review the IS/MND and may submit further comments. In addition, Adventist welcomes the opportunity to discuss its concerns directly with the Project applicant and with the City.

### **Air Quality**

The IS/MND requires no mitigation to ensure that impacts of three years of construction and decades of operation of a very large medical, commercial, hotel, educational and residential facilities will not result in significant air quality impacts. In addition, there is no mechanism to assure the Project will adhere to the assumptions in the air quality modeling that resulted in estimated emissions under the Air District thresholds. Without these requirements,

there is a fair argument that the Project may exceed the assumptions in the IS/MND and therefore potentially significant impacts to air quality could occur.

### **Biology**

The IS/MND states that the Project site has unoccupied burrows and suitable habitat for burrowing owl, San Joaquin kit fox, and nesting birds. The mitigation measure for burrowing owl is less extensive than similar measures in other jurisdictions and it inappropriately defers mitigation by requiring the applicant to get a permit from the California Department of Fish and Wildlife (“**CDFW**”) if owls are found. CEQA requires that mitigation be formulated within the IS/MND, not as part of a future permitting effort with a responsible agency.

Further, the IS/MND does not describe, let alone analyze, potential impacts to People’s Ditch. Due to changes in operational definitions for navigable waters, the IS/MND finds that it is not possible to definitively predict applicable regulations. For that reason, the IS/MND adopts a mitigation measure “recommending” consultation with the Army Corps of Engineers, CDFW, and the Regional Water Quality Control Board (“**RWQCB**”) to verify the ditch’s jurisdictional status and obtain permits if necessary. The mitigation then says that the project “should” file a notification of streambed alteration and “should” consult with the Army Corps and RWQCB. The analysis on its face acknowledges there may be an impact and the mitigation is not effective because it does not actually require anything, instead deferring all analysis and mitigation to a possible, but not required, future action by the Army Corps, CDFW, and RWQCB.

### **Cultural Resources/Tribal Cultural Resources**

Peoples Ditch is a previously recorded resource within the Project area. In addition, the pedestrian survey identified a refuse scatter and an isolate within the Project site. The IS/MND defers all analysis and mitigation relating to potential impacts to these known resources. The IS/MND does not analyze whether any of the known resources are eligible for listing in the California Register. Instead, it says: “To determine whether the proposed project would cause a substantial adverse change in the significant quantities of a historical resource, additional mapping and subsurface testing would be required.” A mitigation measure requires such additional mapping and subsurface testing for the refuse scatter “to evaluate its eligibility for including in the California Register.” The same mitigation requires additional focused subsurface testing to confirm presence/absence or high-sensitivity paleosols that may include intact prehistoric cultural deposits. If those are found, the mitigation requires further investigation to determine if it is eligible for the California Register. This is deferred mitigation not allowed under CEQA and demonstrates there is a fair argument that the Project may result in a significant impact to cultural resources.

In addition, the mitigation does not apply to Peoples Ditch. The IS/MND acknowledges that the ditch is a previously recorded resource. The analysis states that a portion of the ditch on the project site is less than 50 years old and that the “only remaining evidence of

the original alignment of the ditch is its scar on the landscape and the remains of a concrete containment well at the northern end of the abandoned segment.” The IS/MND does not address whether the People’s Ditch is eligible for listing on the California Register. Instead, it states that additional mapping and subsurface testing would be required to determine significance for impacts to historical resources and then the mitigation does not address People’s Ditch. Accordingly, the IS/MND acknowledges that there may be significant impacts to historical resources and those potential impacts are not analyzed or mitigated.

Finally, the IS/MND states that the City met with the Tachi Yokut Tribe on a different project and the Tribe requested that all projects include a mitigation measure for a burial treatment plan. The IS/MND then states that it is requiring that mitigation measure to reduce impacts to a less than significant level. The mitigation measure simply requires preparation of a burial treatment plan, without any description of the plan requirements or any performance standards to ensure that impacts are reduced to a less-than-significant level. Accordingly, the IS/MND finds there is a potential impact but does not include mitigation that can demonstrably reduce that impact to a less-than-significant level.

### **Geology**

The IS/MND does not describe the potential for paleontological resources to be found on the Project site. The mitigation then starts with “The project applicant shall inform its contractor(s) of the sensitivity of the project area for paleontological resources.” This is a puzzling reference and suggests that the Project site is actually sensitive, but such sensitivity is not disclosed in the IS/MND.

### **Greenhouse Gas Emissions**

The City and the Air District do not have numeric significance thresholds and the Regional Climate Action Plan is only effective through the year 2020. Accordingly, the IS/MND evaluates emissions based on the Project’s consistency with state greenhouse gas emissions reduction goals, specifically the 2022 Scoping Plan. The IS/MND analysis is abbreviated, finding that the Project will provide electric vehicle charging, has vehicle miles traveled reduction benefits, and will comply with Title 24 building requirements. For the analysis of whether the Project would conflict with any applicable plan, the IS/MND assumes that the requirements from the Regional Climate Action Plan will continue to provide reductions after the milestone year and help demonstrate continued progress towards achieving the state’s 2030 target. This assumption is unsupported, as different strategies will need to be employed to reach ever-increasing emissions reduction targets. The IS/MND does not adequately analyze Project

greenhouse gas emissions impacts in a post-2020 environment and there is a fair argument that Project may result in significant impacts without adequate mitigation.

### **Hydrology/Utilities/Water Supply**

Water Code Section 10910 requires a Water Supply Assessment for mixed use projects that includes one or more of the following components: residential (500+ units); shopping center or business establishment (500,000+ square feet); commercial office building (250,000+ square feet); and projects demanding water equivalent to a 500-dwelling unit project. Combining all of the uses proposed by the Project, preparation of a Water Supply Assessment and inclusion of that Water Supply Analysis in the CEQA analysis is required. The IS/MND does not include a Water Supply Assessment approved by the City in its role as a water service provider. Further, the IS/MND does not include the information required for a Water Supply Assessment. The IS/MND does not analyze the City's ability to serve the Project over the required 20-year horizon accounting for both normal and drought years. The Project is large and will required extensive water over the three-year construction period and decades of operation in geographical area that is known for periods of prolonged drought. There is a fair argument of a potential impact to water supply and the IS/MND does adequately analyze or impose any mitigation for the impact.

### **Noise**

The IS/MND conducted ambient noise monitoring and modeled noise impacts for traffic noise, but it does not model construction noise impacts at sensitive receptors. Instead, the IS/MND includes the typical construction equipment maximum noise levels at 100 feet, 200 feet, and 300 feet, some of which exceed the City's exterior noise standard of 70dBA (daytime) for residential uses. The nearest sensitive receptors are 150 feet away. Hence, the IS/MND shows a possible exceedance of the daytime exterior noise standard not even accounting for ambient noise during three years of construction. The analysis states that construction noise is not considered to be a significant impact if construction is limited to the allowed hours and equipment is adequately maintained and muffled; however, required mitigation states only that activities "should" not occur outside of 7:00 am to 8:00 pm. In any event, the IS/MND still shows a potential exceedance of the exterior daytime noise standard for sensitive residential receptors. The IS/MND demonstrates a fair argument of an impact because it does not model the actual anticipated noise levels at nearby sensitive receptors and then the mitigation is general and non-specific and there is no demonstration that required "muffling" will reduce noise levels at sensitive receptor locations to the required standard.

This letter provides our comments based on our initial review of the lengthy IS/MND for this large and important project right next to our client's existing hospital and medical office facility. We anticipate engaging in discussions with various technical consultants to further evaluate the potential impacts of the Project and may submit additional comments as

the City continues its consideration of the proposed legislative and administrative entitlements required for the Project.

Please include the undersigned in all future public administrative notices pertaining to the Project. Thank you for your consideration of the foregoing comments.

Sincerely,

A handwritten signature in blue ink, appearing to read "D. P. Waite", is centered below the word "Sincerely,".

David P. Waite

105214\16940918v2



November 12, 2024

Dear Hanford Planning Team,

Adventist Health and the Hanford Place team have been able to meet and discuss the project. We are excited for the development and the enhancement of our community.

Please accept this letter as support of the project. We agree with the Construction Management Plan as previously shared (Exhibit 1) below.

Thank you for your partnership.

Jason Wells



President  
Central California Network of Adventist Health

Exhibit 1:

**Hanford Place**  
**Construction Management Plan**

**1. Traffic management**

- a. Road closures and lane reductions
  - i. Ensuring access of emergency service vehicles
  - ii. Maintain access to the Adventist Health points of access
- b. Haul Route
  - i. Specify both construction-related vehicle travel and oversize load haul routes, minimizing construction traffic during the AM and PM peak hour, distributing construction traffic flow across alternative routes to access the project site, and avoiding roadways accessing Adventist Health to the maximum extent feasible
- c. Institute construction work hours as necessary, such that the arrival and/or departure times of workers would be staggered as necessary.
- d. Timing of deliveries of heavy equipment and building materials
- e. Directing construction traffic with a flag person, if necessary
- f. Temporary signing, lighting, and traffic control devices if necessary

**2. Dust management**

- a. When grading is unavoidable, it should be phased and done with the application of approved chemical dust palliatives
- b. Use of dust suppression measures during road surface preparation activities, including grading and compaction
- c. Installation of wind barrier fencing or screening
- d. Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site
- e. All trucks hauling dirt, sand, soil, or other loose materials shall be covered or shall maintain at least 2 feet of freeboard

**3. Noise**

- a. Adherence to City-required construction hours

- b. Construction equipment shall be equipped with manufacturers approved mufflers and baffles
- c. Equipment staging shall be located in areas that will create the greatest distance between construction-related noise sources and Adventist Health to the extent practical
- d. All stationary construction equipment placed so that emitted noise is directed away from Adventist Health, where feasible

#### 4. Aesthetics

- a. Maintenance and trash abatement
- b. Landscape revegetation and restoration

#### 5. Point of contact for Adventist and construction management personnel if issues arise

**From:** [Rhett Swasey](#)  
**To:** [Gabrielle Myers](#)  
**Cc:** [lee Fausett](#); [tcollier2022@gmail.com](mailto:tcollier2022@gmail.com)  
**Subject:** Hanford Place Project  
**Date:** Thursday, January 9, 2025 7:50:03 PM

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**CAUTION:** This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Gabrielle Myers  
Senior Planner  
Hanford Planning Commission

It was nice to briefly meet with you Tuesday and exchange contact information. Per that conversation I am sending this email to express concerns for the Hanford Place Project.

I am a partner in business at Hanford Veterinary Hospital and have interest in Funny Faces Bed and Biscuit boarding facility which are located adjacent to the proposed development. I am writing to express concern over the negative impacts that will be dealt to our businesses during the construction phase of the project.

We purchased the old Adventure Park in 2012 and began construction shortly after on our state of the art veterinary hospital and boarding facility. We moved in and have been at our current location since 2014. We feel we provide a necessary service to the City of Hanford and surrounding communities. We are happy and welcome the news that there are plans for the vacant area to our east and north, this area has been a problem for fires, homelessness and other undesirable problems associated with vacant land in our city limits.

We thought that at some point we may be approached and asked for input/ concerns about the planned development but as of the writing of this email we have not been contacted. We are aware that the authors of the proposed project are aware of the impact it will have on us, in fact we are mentioned in the Initial Study/ Mitigated Negative Declaration nine (9) times (pp. 21, 76, 116, 117, 127, 466, 477, 491, and 496). We would like to have some input into the redesign of Glendale Ave as it approaches from the west. We have a number of concerns.

1. Currently the schematics show the project taking a large part of the parking lot that services Funny Faces. It would also require moving major water lines and backflow preventers, signage, and landscaping.
2. We are concerned that the roadway will make it easy to speed in front of our property where pets are present.
3. The schematics show a divided roadway with no breaks or access in the middle median noted for entrance to Hanford Veterinary Hospital
4. We currently have a gate that is locked after hours at our property entrance on Glendale Ave. This added security and safety will need to be removed with a through roadway, but we would like something to replace it.
5. We currently have only 1 way in and out of our property via Glendale Ave. Any construction on this road would have a negative effect on access to our businesses.

We are happy for and welcome any improvements that are planned for the surrounding area but would request that we have a seat at the table concerning the above issues.

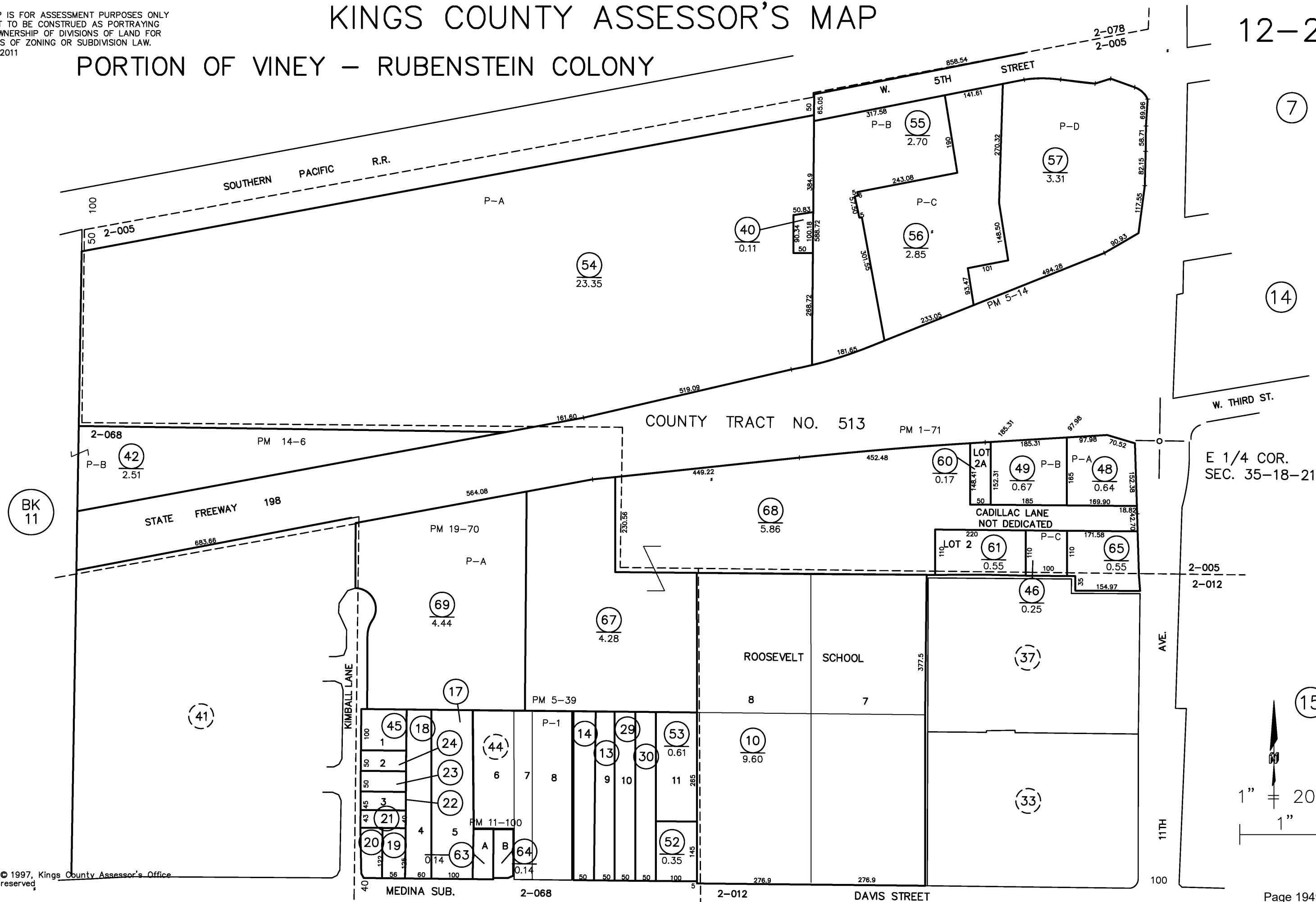
Rhett Swasey- DVM  
Hanford Veterinary Hospital

cc- Lee Fausett and Tim Collier

KINGS COUNTY ASSESSOR'S MAP

# PORTION OF VINEY – RUBENSTEIN COLONY

12-29



THIS MAP IS FOR ASSESSMENT PURPOSES ONLY  
IT IS NOT TO BE CONSTRUED AS PORTRAYING  
LEGAL OWNERSHIP OF DIVISIONS OF LAND FOR  
PURPOSES OF ZONING OR SUBDIVISION LAW.  
MAY 2016

KINGS COUNTY ASSESSOR'S MAP  
W 1/2 SEC. 35-18-21

11-06

